RESOLUTION NO. 2016-07-82

STATE OF GEORGIA
COUNTY OF FULTON

RESOLUTION FOR TRANSMITTAL OF THE DRAFT CAPITAL IMPROVEMENTS ELEMENT (CIE) AMENDMENT

WHEREAS, the City of Sandy Springs has prepared a draft Capital Improvements Element amendment, which will be incorporated into and update the *Sandy Springs Comprehensive Plan*; and

WHEREAS, the draft Capital Improvements Element amendment was prepared in accordance with the "Development Impact Fee Compliance Requirements" and the "Minimum Standards and Procedures for Local Comprehensive Planning" adopted by the Board of Community Affairs pursuant to the Georgia Planning Act of 1989; and,

WHEREAS, a duly advertised Public Hearing was held on July 19, 2016, at 6:00 P.M. in the Sandy Springs City Hall in accordance with Section (10)(a)1 of Chapter 110-12-2-.04 of the Development Impact Fee Compliance Requirements.

BE IT THEREFORE RESOLVED, that the City Council of the City of Sandy Springs, Georgia, does hereby submit the draft Capital Improvements Element amendment to the Atlanta Regional Commission for Regional and State review, as per the requirements of the Development Impact Fee Compliance Requirements.

RESOLVED this the 19th day of July, 2016.

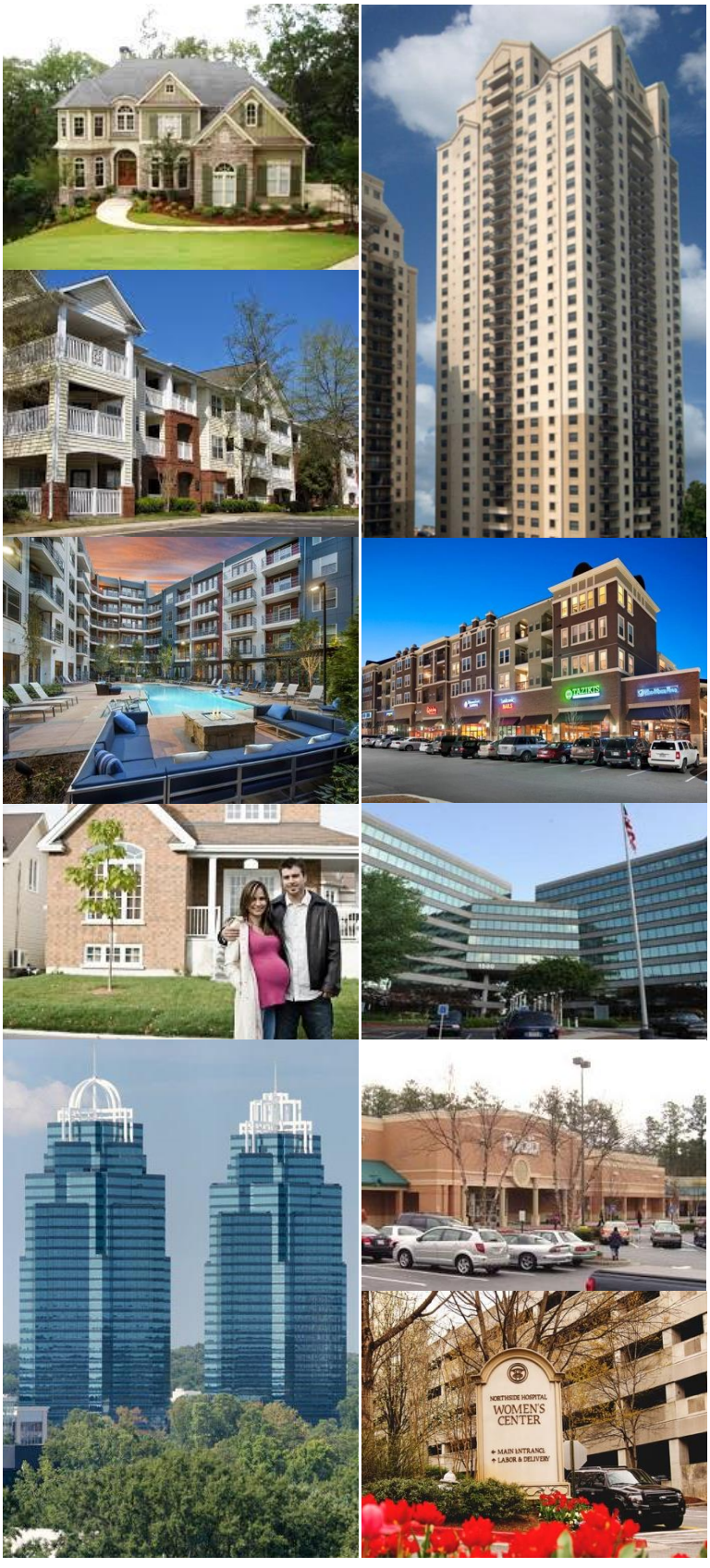
Approved:

Russell K. Paul, Mayor

Attest:

Michael D. Casey, City Clerk

(Seal)



SANDY SPRINGS
GEORGIA

Impact Fee Program Update

CAPITAL IMPROVEMENTS ELEMENT

Draft: June 28, 2016

ROSS+associates
urban planning & plan implementation

in association with

amec foster wheeler

Sandy Springs Impact Fee Program Update

CAPITAL IMPROVEMENTS ELEMENT

Table of Contents

The **Appendix** follows the Glossary and includes:

- Population Forecasts
- Housing Forecasts
- Employment Forecasts
- Traffic Demand

Introduction

The purpose of a Capital Improvements Element (CIE) is to establish where and when certain new capital facilities will be provided within a jurisdiction and the extent to which they may be financed through an impact fee program. This document represents an update to Sandy Spring's Capital Improvements Element, which will be adopted as an amendment to its Comprehensive Plan. The City's original Capital Improvements Element was adopted in 2007 and its impact fee program became effective March 1, 2008, through adoption of the City's Impact Fee Ordinance.

As required by the Georgia Development Impact Fee Act ("State Act" or "DIFA"), and defined by the Department of Community Affairs in its Development Impact Fee Compliance Requirements, the CIE must include the following for each capital facility category for which an impact fee may be charged:

- a **projection of needs** for the 20+ year planning period—2016 to 2040;
- the designation of **service areas**—the geographic area in which a defined set of public facilities provide service to development within the area;
- the designation of **levels of service** (LOS)—the service level that is being and will be provided;
- a **schedule of improvements** listing impact fee related projects and costs for the 20+ year planning period;
- a description of **funding sources** for the 20+ year planning period.

Additionally, in accordance with the State Act and DCA's Development Impact Fee Compliance Requirements, a policy statement regarding potential impact fee exemptions is included in this CIE if the City wishes to adopt or apply such exemptions in the future.

Impact Fees Authorized

Impact fees are authorized in Georgia pursuant to O.C.G.A. §36-71-1 et seq., the *Georgia Development Impact Fee Act* (DIFA), and are administered by the Georgia Department of Community Affairs pursuant to Chapter 110-12-2, *Development Impact Fee Compliance Requirements,* of the Georgia Administrative Code. Under DIFA, the City can collect money from new development based on that development's proportionate share—the 'fair share'—of the cost to provide the facilities needed specifically to serve new development. This includes the categories of roads, public safety and parks & recreation. Revenue for such facilities can be produced from new development in two ways: through future taxes paid by the homes and businesses that growth creates, and through an impact fee assessed as new development occurs.

Categories for Assessment of Impact Fees

To assist in paying for the high costs of expanding public facilities and services to meet the needs of projected growth and to ensure that new development pays a fair and reasonable proportionate share of the costs of public facilities, Sandy Springs has developed this CIE for the following public facility categories authorized by the Georgia Development Impact Fee Act:

- Parks, open space and recreation;
- Public safety (including fire protection and law enforcement); and
- Road improvements.

The chapters in this Capital Improvements Element provide population and employment forecasts and detailed information regarding the inventory of current facilities and planned improvements, the levels of service, current estimates of project costs, and the impact of new growth and development on the specific capital improvements within each public facility category.

The following table shows the facility categories that are eligible for impact fee funding under DIFA and that are included in this report. The service area for each public facility category—that is, the geographical area served by the facility category—is also given, along with a description of the factors upon which the level of service to be delivered for each facility category is based.

Overview of Impact Fee Program Facilities

	Parks and Recreation		Public Safety	Road Improvements
	Park Facilities and Components	Multi-Use Path System		
Eligible Facilities	Park acres and recreation components such as ballfields, tennis courts and recreation structures	Interconnected system of paths, sidewalks & bicycle trails	Fire stations, fire trucks & heavy police vehicles; warning sirens & radio towers; administrative & training space	Road projects creating capacity for Sandy Springs residents and workers
Service Area	Citywide	Citywide	Citywide	Citywide
Level of Service Standard Based on …	Number of acres and number of recreation components per dwelling unit	Length of trail per 2040 day/night population	Floor area and number of vehicles per 2040 day/night population	LOS "D" for entire road network
Historic Funding Source(s)	Impact Fees, General Fund	General Fund	Impact Fees, General Fund	Impact Fees, General Fund

Terms used in the **Overview Table**:

Eligible Facilities under the State Act are limited to capital items having a life expectancy of at least ten years, such as land, buildings and certain vehicles. Impact fees cannot be used for the maintenance, supplies, personnel salaries, or other operational costs, or for short-term capital items such as computers, furniture or most automobiles. None of these costs are included in the impact fee system.

Service Areas are the geographic areas that the facilities serve, and the areas within which the impact fee can be collected. Monies collected in a service area for a particular category may only be spent for that purpose, and only for projects that serve that service area.

Level of Service Standards are critical to determining new development's fair share of the costs. The same standards must be applied to existing development as well as new to assure that each is paying only for the facilities that serve it. New development cannot be re-

quired to pay for facilities at a higher standard than that available to existing residents and businesses, nor to subsidize existing facility deficiencies.

Funding Sources for capital improvements have historically been General Fund tax collections, net of any grants received (if any), and impact fees. Impact fees will continue to be used to fund all or a portion of eligible impact fee costs. Tax collections include the City's normal annual property tax levy and any special levies for debt instruments (such as bonds) that are intended to provide funding for impact fee projects in whole or in part.

Editorial Conventions

This report observes the following conventions:

The capitalized word 'City' applies to the government of Sandy Springs, the City Council or any of its departments or officials, as appropriate to the context. An example is "the City has adopted an impact fee ordinance".

The lower case word 'city' refers to the geographical area of Sandy Springs, as in "the population of the city has grown".

The same conventions are applied to the words 'County' and 'county', 'State' and 'state'.

Single quote marks (' and ') are used to highlight a word or phrase that has a particular meaning or refers to a heading in a table.

Double quote marks (" and ") are used to set off a word or phrase that is a direct quote taken from another source, such as a passage or requirement copied directly from a law or report.

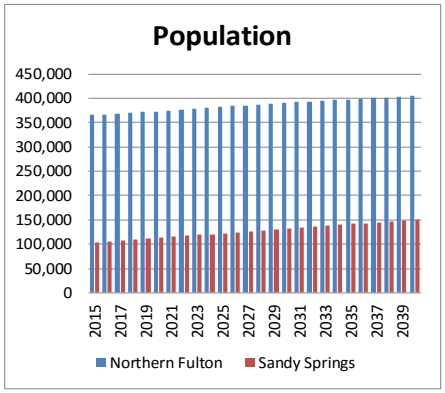
Numbers shown on tables are often rounded from the actual calculation of the figures for clarity, but the actual calculated number of decimal points is retained within the table for accuracy and further calculations.

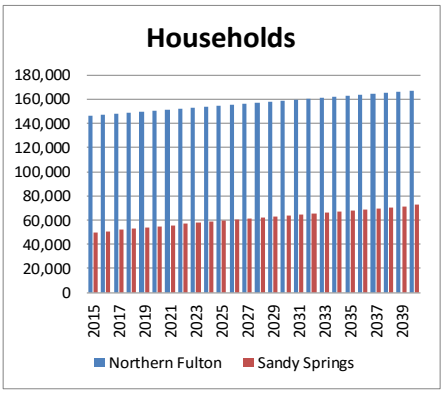
Forecasts

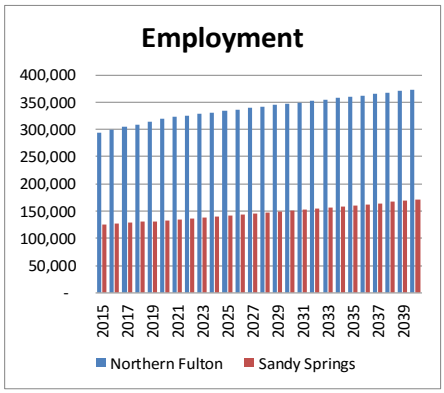
In order to accurately calculate the demand for future services in Sandy Springs, new growth and development must be quantified in future projections. These projections include forecasts for population, households, housing units, and employment over the next 20+ years to 2040. The projections provide the base-line conditions from which the current (2016) Level of Service calculations are produced. Also, projections are combined to produce what is known as 'day/night population'. This is a method that combines resident population and employees to produce an accurate picture of the total number of persons that rely on certain 24-hour services, such as fire protection. The projections used for each public facility category are specified in each public facility chapter.

This chapter presents a summary of the forecasts that have been identified as the most likely for Sandy Springs, based on an analysis of past trends and market demand projections prepared for the City by Robert Charles Lesser & Company (RCLCO) in 2015.[1] The results are detailed in the attached Appendix.

Continuing past trends, Sandy Springs is expected to continue to grow at a faster pace than its immediate neighbors to the north with regard to population, households and jobs. Its neighbors—Roswell, Milton, Alpharetta, Mountain Park and John's Creek— contain the preponderance of population and housing units in the 6-city Northern Fulton area, but are expected to grow collectively at a slower pace than Sandy Springs, which is expected to increase by 43% in both population and households between 2016 and 2040.







	Northern Fulton	Sandy Springs
2016	366,783	105,666
2040	404,617	150,879
Increase	10%	43%

	Northern Fulton	Sandy Springs
2016	147,119	50,693
2040	166,818	72,375
Increase	13%	43%

	Northern Fulton	Sandy Springs
2016	298,805	126,910
2040	372,916	170,980
Increase	25%	35%

Northern Fulton includes Sandy Springs along with Roswell, Alpharetta, Milton, Mt. Park and John's Creek. ARC Regional projections interpolated by ROSS+associates.

Over the coming 20+ years, the city is expected to increase its share of all residents among the six cities from 28.8% to 37.3%, and grow from 34.5% to 43.4% of all households. Sandy Springs is also forecast to increase its dominance in employment in the area, adding 44,070 new jobs by

[1] *Sandy Springs Comprehensive Plan: RCLCO Market Report*, Robert Charles Lesser & Company, October 29, 2015.

2040 compared to the job increase among all of the other Northern Fulton cities of 30,041, while increasing Sandy Springs's share of area employment from 42.5% to almost 46%.

For a more detailed description of the methodologies considered in preparing the population, household, housing unit and employment forecasts, see the Appendix to this report. The forecasts cover the 2016 to 2040 time frame in order to be consistent with *The Atlanta Region's Plan* 2040 timeframe prepared by the Atlanta Regional Commission (ARC).

Population and Housing Unit Forecasts

Table 1 presents the forecasts for population for each year from 2016 to 2040 and provides the forecasts for households and housing units over the same period. The figures shown are, in essence, mid-year estimates reflecting Census Bureau practice. In other words, the increase in population between 2016 and 2040 would actually be from July 1, 2016 to July 1, 2040.

The population forecasts represent a projection of the annual population figures reported by the Census Bureau through 2014, guided by the 'high' and 'low' projections in the market report. The number of households is calculated based on the most recently reported average household size in the city, and divided into the population forecasts. Since households are synonymous with 'occupied housing units', the total number of housing units is calculated by applying an occupancy rate to account for vacant units.

Table 1: Population, Housing and Employment Forecasts

	Population	Households	Housing Units	Jobs
2016	105,666	50,693	56,226	126,910
2017	107,545	51,744	57,392	128,496
2018	109,425	52,772	58,532	130,102
2019	111,305	53,791	59,663	131,728
2020	113,186	54,809	60,792	133,374
2021	115,067	55,824	61,918	135,041
2022	116,948	56,776	62,973	136,729
2023	118,830	57,699	63,997	138,438
2024	120,712	58,603	65,000	140,167
2025	122,595	59,494	65,988	141,919
2026	124,477	60,373	66,963	143,693
2027	126,361	61,246	67,931	145,489
2028	128,244	62,108	68,887	147,307
2029	130,128	62,952	69,824	149,148
2030	132,013	63,776	70,738	151,012
2031	133,898	64,594	71,645	152,899
2032	135,783	65,402	72,541	154,809
2033	137,669	66,202	73,428	156,744
2034	139,555	67,010	74,325	158,703
2035	141,441	67,831	75,235	160,684
2036	143,328	68,682	76,179	162,692
2037	145,215	69,564	77,157	164,726
2038	147,102	70,473	78,166	166,785
2039	148,990	71,409	79,204	168,869
2040	150,879	72,375	80,275	170,980

Employment Forecasts

Table 1 also shows the forecasts for employment growth in Sandy Springs, from 2016 to 2040. The employment figures were arrived at through an analysis combining the employment projections for Sandy Springs by the Atlanta Regional Commission and the midpoint between the 'high' and 'low' demand projections derived from the market report.

Service Area Projections

In Table 2 the service area forecasts are presented for a single citywide service area measured in two ways: citywide housing units (which quantifies Parks and Recreation service demands), and citywide day/night population (for the public safety services categories, fire and law enforcement).

The 'day/night' population calculation is a combination of the population and future employment projections. The use of day/night popula-

tion in impact cost and impact fee calculations is based upon the clear rational nexus between persons and services demanded on a 24-hour basis.

The day/night population is used to determine Level of Service standards for facilities that serve both the resident population and business employment. The police department, for instance, protects one's house whether or not the residents are at home, and protects stores and offices whether or not they are open for business. Thus, this 'day/night' population is a measure of the total services demanded of a 24-hour service provider facility and a fair way to allocate the costs of such a facility among all of the beneficiaries.

Table 2: Service Area Forecasts

Year	Housing Units (Recreation & Parks)	Day/Night Population (Public Safety)
2016	56,226	232,576
2017	57,392	236,041
2018	58,532	239,527
2019	59,663	243,033
2020	60,792	246,560
2021	61,918	250,108
2022	62,973	253,677
2023	63,997	257,268
2024	65,000	260,879
2025	65,988	264,514
2026	66,963	268,170
2027	67,931	271,850
2028	68,887	275,551
2029	69,824	279,276
2030	70,738	283,025
2031	71,645	286,797
2032	72,541	290,592
2033	73,428	294,413
2034	74,325	298,258
2035	75,235	302,125
2036	76,179	306,020
2037	77,157	309,941
2038	78,166	313,887
2039	79,204	317,859
2040	80,275	321,859
Increase:	**24,049**	**89,283**

The figures on Table 2 are the figures that will be used in subsequent public facility category chapters for Parks and Recreation, and for Public Safety services.

Impact fees for the Road Improvements category are not population based, but based on vehicle trip generation data. As described in the Appendix of this report, future growth and development in the city will account for almost 29% of all city-generated traffic on Sandy Springs's roads by 2040.

Parks and Recreation Facilities

Introduction

Public recreational opportunities are available in Sandy Springs through a number of parks and their related recreation components operated by the City of Sandy Springs Recreation and Parks Department, as well as the City's multi-use path system.

Parks and Recreation Components

Table 3: Existing Park and Recreation Component Inventory

Description	Number of Acres
Park/Facility Name	
Abernathy (Art Center) Park	3.70
Abernathy Greenway Park - North	7.75
Abernathy Greenway Park - South	14.00
Abernathy Veterinary Property - Greenspace	4.17
Allen Road Park	3.20
Big Trees Forest Preserve	20.00
City Springs	1.00
Crooked Creek Park	4.90
Eagle Park	0.10
Ed Morey Pocket Park	0.13
Grace Park	0.46
Hammond Park	13.71
Island Ford Park	10.46
Johnson Ferry Rd. Greenspace - South	4.13
Johnson Ferry Rd. Greenspace - North	4.79
Kitty Hawk Greenspace	0.50
Lost Corners Preserve	24.00
Marsh Creek Park	2.20
Morgan Falls Ball Fields	27.26
Morgan Falls Overlook Park	27.81
Morgan Falls River Park/Dog Park	3.42
Old Riverside Park	23.23
Powers Ferry Greenspace	3.00
Ridgeview Park	20.72
Sandy Springs Historic Site (Heritage Green Park)	5.21
Sandy Springs Tennis Center	27.66
Windsor Meadows Park	5.00
Total Park Acres:	***262.51***

Description	Number of Components
Recreation Components	
Baseball/Softball Field	10
Soccer Field	1
Basketball Court (outdoor)	3
Multi-Purpose Field	4
Tennis Court	30
Recreation Center	1
Community Building	1
Restroom Building	4
Consessions/RR Buildings	3
Playground	9
Picnic Shelter	13
Park Walking Trail	9
Community Pavilion	1
Grassed Playfield (Free Play Area)	1

Demand for city parks and their related recreational facilities (such as ball fields, playgrounds and picnic shelters) are almost exclusively related to the city's resident population. Businesses make some incidental use of public parks for office picnics, company softball leagues, etc., but the use is minimal compared to that of the families and individuals who live in the city.

The parks and recreation component impact fee is therefore based on future residential growth. (The city's path system, in contrast, serves both the residents and employees in the city, and is discussed in a subsequent section of this chapter.)

Table 3 provides an inventory of the acreage of parks and number of components under the control of the Recreation and Parks Department in 2016.

Service Area

All parks and recreation components are operated as a citywide system. Facilities are provided equally to all residents, and often used on the basis of the programs available, as opposed to proximity of the facility. For instance, children active in competitive sports play games at various locations, based on scheduling rather than geography. Other programs are located only at certain centralized facilities, to which any Sandy Springs resident can come. Thus, the entire city is considered a single service area for parks and recreation.

Level of Service

Level of Service standards for park lands and their related recreational components have been adopted by the City in the Recreation and Parks Master Plan (2007), and are shown in Table 4.

For most facilities, the adopted Level of Service (LOS) standards are expressed in terms of the number of people each acre of land or recreation component is intended to serve. In some cases, the LOS is indicated as the number of components 'per park'. For the latter, the number of people served by 'per park' components is calculated using the current inventory for each component type divided into the current population. In all cases, the LOS 'per population' standards can be recalculated as the number of housing units served by each acre or component based on the city's number of people living in an average household (the average household size). Since impact fees are assessed at the time a building permit is issued (and the impact fee will be applied to residential uses), the LOS then must be converted to a 'per housing unit' basis.

Table 4 shows how the adopted level of service for each recreation component is converted from a 'per population' basis to a 'per housing unit' basis. First, the currently adopted LOS of 1 per a 'certain number of people' for each component is converted to one component per 'X' housing units using the city's current average household size. This number is then divided into '1' to produce the 'per housing unit' figure. By way of example, the adopted LOS for basketball courts is 1 court per 20,000 people. That number—20,000—is divided by the 2016 average household size to convert 'people' into 'housing units'. The result is the converted standard of 1 court per 10,642 housing units. By dividing the component (1) by the number of housing units it serves results in the portion of a basketball court that serves 1 housing unit (0.000094).

[Reversing the calculation, 0.000094 times 10,642 housing units yields 1 basketball court.]

Table 4: Level of Service Conversion

Component Type*	Adopted Level of Service**			Level of Service per "X" Housing Units***			Level of Service per Each Housing Unit****	
Park Land (acres)	1 acre per	160	population =	1 acre per	85	Housing Units =	0.0117457	for each Housing Unit
Baseball/Softball Field	1 per	8,000	population =	1 per	4,257	Housing Units =	0.0002349	for each Housing Unit
Soccer Field	1 per	12,000	population =	1 per	6,385	Housing Units =	0.0001566	for each Housing Unit
Basketball Court (outdoor)	1 per	20,000	population =	1 per	10,642	Housing Units =	0.0000940	for each Housing Unit
Multi-Purpose Field	1 per	40,000	population =	1 per	21,284	Housing Units =	0.0000470	for each Housing Unit
Tennis Court	1 per	2,500	population =	1 per	1,330	Housing Units =	0.0007517	for each Housing Unit
Swimming Pool	1 per	30,000	population =	1 per	15,963	Housing Units =	0.0000626	for each Housing Unit
Community Pavilion	1 per	50,000	population =	1 per	26,606	Housing Units =	0.0000376	for each Housing Unit
Recreation Center	1 per	30,000	population =	1 per	15,963	Housing Units =	0.0000626	for each Housing Unit
Community Building	1 per	105,666	population =	1 per	56,226	Housing Units =	0.0000178	for each Housing Unit
Restroom Building	1 per	26,417	population =	1 per	14,057	Housing Units =	0.0000711	for each Housing Unit
Consessions/RR Buildings	1 per	35,222	population =	1 per	18,742	Housing Units =	0.0000534	for each Housing Unit
Playground	1 per	11,741	population =	1 per	6,247	Housing Units =	0.0001601	for each Housing Unit
Picnic Shelter	1 per	8,128	population =	1 per	4,325	Housing Units =	0.0002312	for each Housing Unit
Park Walking Trail	1 per	11,741	population =	1 per	6,247	Housing Units =	0.0001601	for each Housing Unit
Grassed Playfield (Free Play)	1 per	105,666	population =	1 per	56,226	Housing Units =	0.0000178	for each Housing Unit
Canoe/Kayak Launch	1 per	105,666	population =	1 per	56,226	Housing Units =	0.0000178	for each Housing Unit
Maintenance Facility	1 per	105,666	population =	1 per	56,226	Housing Units =	0.0000178	for each Housing Unit

* Includes existing park facilities as well as facilities that are recommended in the Recreation and Parks Master Plan.

** Level of Service adopted in Recreation and Parks Master Plan: 1 acre per 160 population (park land) & 1 component per population shown. (Exception: Components shown after 'Recreation Center' are based on the current inventory and population due to the Master Plan's use of 'per park' or 'per field' vs. 'per population' standard for these components .)

*** Converted using average population per housing unit in 2016.

**** "1" divided by the number of housing units for each component under 'Level of Service per "X" Housing Units' column.

■ Forecasts for Service Area

Existing and Future Demand Table 5 shows the current and future demand in land and recreation components based on the LOS standards adopted by the City and shown on Table 4.

Existing demand is calculated in order to determine if there are currently more than enough facilities to serve the current (2016) population or if there is a shortfall requiring future facilities to be built to serve today's population.

For the number of acres and facilities to meet future population needs, the increase in housing units between now and 2040 is multiplied by each level of service standard to produce the future demand. The 'new units' figure in the footnote is the citywide increase taken from Table 2.

Table 5: Existing and Future Demand

Component Type	Adopted LOS per Housing Unit	Existing Demand (2016)*	New Growth Demand (2016-40)**
Park Land (acres)	0.0117457	660.41	282.47
Baseball/Softball Field	0.0002349	13.21	5.65
Soccer Field	0.0001566	8.81	3.77
Basketball Court (outdoor)	0.0000940	5.28	2.26
Multi-Purpose Field	0.0000470	2.64	1.13
Tennis Court	0.0007517	42.27	18.08
Swimming Pool	0.0000626	3.52	1.51
Community Pavilion	0.0000376	2.11	0.90
Recreation Center	0.0000626	3.52	1.51
Community Building	0.0000178	1.00	0.43
Restroom Building	0.0000711	4.00	1.71
Consessions/RR Buildings	0.0000534	3.00	1.28
Playground	0.0001601	9.00	3.85
Picnic Shelter	0.0002312	13.00	5.56
Park Walking Trail	0.0001601	9.00	3.85
Grassed Playfield (Free Play)	0.0000178	1.00	0.43
Canoe/Kayak Launch	0.0000178	1.00	0.43
Maintenance Facility	0.0000178	1.00	0.43

* 2016 Housing Units = 56,226
** New Units (2040) = 24,049

Note that 'demand' figures are expressed in decimals rather than whole numbers. This allows a high level of accuracy when dealing with cost allocations between existing residents and future growth. For instance, a particular new facility may in part meet a current need and in part serve future growth; each would be responsible for their 'fair share' of the cost. As will be seen, however, ultimately recreation component needs are converted to whole numbers.

Impact Fee Eligibility

New parks and recreation components are eligible for impact fee funding only to the extent that the improvements are needed to specifically serve new growth and development, and only at the level of service applicable citywide. Table 6 shows the number of new park acres and recreation components that are needed to satisfy both current and future needs of the city's residents, and the extent to which fulfillment of those needs will serve future growth demand.

The table begins with the current inventory of park lands and components, and the 'existing' demand for those components to meet the needs of the current (2016) population based on the adopted level of service standards (from Table 5). The 'excess or (shortfall)' column compares the existing demand to the current supply of park acres and recreation components.

Where an 'excess' is identified, that means that more land or components (or portions of components) exist than are needed to meet the recreation needs of the current population, and those 'excesses' create capacity to meet the recreational needs of future growth. Conversely, a 'shortfall' indicates that there are not enough acres or components (or portions of components) to meet the recreational needs of the current population based on the adopted LOS.

Table 6: Future Park Facility Impact Fee Eligibility

Component Type	Current Inventory	Existing Demand	Excess or (Shortfall)	New Growth Demand	Net Total Needed	Total Needed*	% Impact Fee Eligible
Park Land (acres)	262.51	660.41	-397.91	282.47	680.38	680.38	41.52%
Baseball/Softball Field	10	13.21	-3.21	5.65	8.86	9	62.77%
Soccer Field	1	8.81	-7.81	3.77	11.57	12	31.39%
Basketball Court (outdoor)	3	5.28	-2.28	2.26	4.54	5	45.20%
Multi-Purpose Field	4	2.64	1.36	1.13	-0.23	-	0.00%
Tennis Court	30	42.27	-12.27	18.08	30.34	31	58.32%
Swimming Pool	0	3.52	-3.52	1.51	5.03	5	30.13%
Community Pavilion	1	2.11	-1.11	0.90	2.02	3	30.13%
Recreation Center	1	3.52	-2.52	1.51	4.03	4	37.66%
Community Building	1	1.00	0.00	0.43	0.43	1	42.77%
Restroom Building	4	4.00	0.00	1.71	1.71	2	85.54%
Consessions/RR Buildings	3	3.00	0.00	1.28	1.28	2	64.16%
Playground	9	9.00	0.00	3.85	3.85	4	96.24%
Picnic Shelter	13	13.00	0.00	5.56	5.56	6	92.67%
Park Walking Trail	9	9.00	0.00	3.85	3.85	4	96.24%
Grassed Playfield (Free Play)	1	1.00	0.00	0.43	0.43	1	42.77%
Canoe/Kayak Launch	1	1.00	0.00	0.43	0.43	1	42.77%
Maintenance Facility	1	1.00	0.00	0.43	0.43	1	42.77%

* For recreation components: 'Net Total Needed' (fraction) rounded to whole number.

The next column on Table 6, labeled 'new growth demand', shows the total demand in land and components specifically to meet future growth needs (from Table 5), and the 'net total needed' to meet all existing and future needs combined. A current 'excess' in facilities reduces the need for new facilities because the 'excess' is already available to serve new growth. A 'shortfall', however, adds to new growth's needs with facilities to bring the current population up to the adopted level of service required to be available to all—both current and future residents.

For example, the City has 4 multi-purpose fields but the adopted level of service indicates that only 2 fields and a portion of a 3rd (0.64 or 64%) are needed to serve the current population, leaving the remainder of the 3rd field (.36) and all of the 4th field available to serve future growth. Future growth, however, will only need a total of 1.13 fields to fully satisfy its needs, based on the adopted LOS. Since 1.36 existing fields are currently available, there is excess capacity (.23) of fields, and no new fields are therefore needed to meet future demand. Accordingly, any new multi-purpose fields that are added to the city's existing inventory are not impact fee eligible.

On the other hand, the City has only 10 ball fields where, mathematically, 13.21 in field capacity is needed to serve current needs, leaving a 'shortfall' in capacity of 3.21 ball fields. New growth will need 5.65 ball fields for itself, to which is added the current population's shortfall for a total of 8.86 to provide for both current and future needs. Rounded to 9 new ball fields, new growth needs only 62.77% (the 5.65 fields) of the total to satisfy its own demand.

Future Costs

Table 7 presents the estimated cost calculations for both the land acquisition and recreation component projects proposed and the maximum extent to which the project costs are impact fee eligible.

The figures in the 'components proposed' column are drawn from the 'total needed' column in Table 6. The 'total cost (2016)' figures on the Table are converted to 'new growth share (2016)' dollars based on the percentage that each improvement is impact fee eligible. Note that this affects most of the recreation components to the extent that partial components identified in the 'net total needed' column of Table 6 had to be rounded to whole components, creating an 'overage' portion of each facility type.

Table 7: Future Costs to Meet Future Demand

Component Type	Components Proposed	Net Cost per Unit*	Gross Cost per Unit**	Total Cost (2016)	% Impact Fee Eligible	New Growth Share (2016)	Net Present Value***
Land							
Park Land	680.38	$ 317,800	$ 317,800	$ 216,224,228	41.52%	$ 89,769,542	$ 103,181,229
		Subtotal Land Acquisition		***$ 216,224,228***		***$ 89,769,542***	***$ 103,181,229***
Recreation Components							
Baseball/Softball Field	9	$ 317,800	$ 387,716	$ 3,489,444	62.77%	$ 2,190,377	$ 2,985,795
Soccer Field	12	$ 254,300	$ 310,246	$ 3,722,952	31.39%	$ 1,168,477	$ 1,592,800
Basketball Court (outdoor)	5	$ 82,700	$ 100,894	$ 504,470	45.20%	$ 227,998	$ 310,793
Multi-Purpose Field	0	$ 203,400	$ 248,148	$ -	0.00%	$ -	$ -
Tennis Court	31	$ 95,400	$ 116,388	$ 3,608,028	58.32%	$ 2,104,085	$ 2,868,167
Swimming Pool	5	$ 3,813,289	$ 4,652,212	$ 23,261,060	30.13%	$ 7,008,633	$ 8,435,895
Community Pavilion	3	$ 349,551	$ 426,453	$ 1,279,358	30.13%	$ 385,475	$ 463,974
Recreation Center	4	$ 7,000,000	$ 8,540,000	$ 34,160,000	37.66%	$ 12,865,650	$ 15,485,653
Community Building	1	$ 600,000	$ 732,000	$ 732,000	42.77%	$ 313,091	$ 376,850
Restroom Building	2	$ 254,300	$ 310,246	$ 620,492	85.54%	$ 530,794	$ 638,887
Consessions/RR Buildings	2	$ 381,400	$ 465,308	$ 930,616	64.16%	$ 597,065	$ 718,653
Playground	4	$ 95,400	$ 116,388	$ 465,552	96.24%	$ 448,034	$ 610,733
Picnic Shelter	6	$ 57,200	$ 69,784	$ 418,704	92.67%	$ 388,024	$ 467,043
Park Walking Trail	4	$ 94,350	$ 115,107	$ 460,428	96.24%	$ 443,102	$ 604,012
Grassed Playfield (Free Play)	1	$ 127,110	$ 155,074	$ 155,074	42.77%	$ 66,328	$ 90,415
Canoe/Kayak Launch	1	$ 63,555	$ 77,537	$ 77,537	42.77%	$ 33,164	$ 39,918
Maintenance Facility	1	$ 222,442	$ 271,379	$ 271,379	42.77%	$ 116,074	$ 139,712
		Subtotal Recreation Component Construction		***$ 74,157,094***		***$ 28,886,371***	***$ 35,829,300***
			Totals:	**$ 290,381,322**		**$ 118,655,914**	**$ 139,010,530**

* Sandy Springs Recreation and Parks Master Plan (2007). Present value (in 2016 dollars) calculated using 2007-2016 average annual Construction cost Index, rounded up to nearest ten or one hundred dollars, as appropriate.

** Includes contingency at 15% and architectural/engineering services at 7%, except for land acquisition.

*** Construction dates vary. NPV based on CPI, BCI or CCI as appropriate, in an average construction year of 2025.

To calculate the Net Present Value of the impact fee-eligible cost estimate for non-construction improvements (the new park land), the currently estimated 2016 cost is inflated to the target year

using the U.S. Department of Labor's 10-year average Consumer Price Index (CPI) and then is reduced using the Net Discount Rate. For the construction of the recreation components, the NPVs are calculated by increasing the current (2016) estimated construction costs using the Engineering News Record's (ENR) 10-year average building cost inflation (BCI) rate for buildings (such as recreation centers) and the average construction cost inflation (CCI) rate for all other projects. All project costs are then reduced to current dollars using the Net Discount Rate.

Multi-Use Path System

Public recreational opportunities are available in Sandy Springs through a number of parks and park-related recreation components maintained by the City. These facilities were addressed in the previous section of this chapter. In addition, the City has planned an extensive system of multi-use paths for walking, jogging and bicycling to serve the recreational needs of residents and workers as they move throughout the city to these parks and other destinations. This path system falls under the public facility category in Georgia's Development Impact Fee Law for "Parks, open space and recreation areas and related facilities".

Service Area

The City's multi-use path system is planned and operates as an inter-related citywide system. Thus, the entire city is considered a single service area for the path system as are all other City parks and recreation facilities.

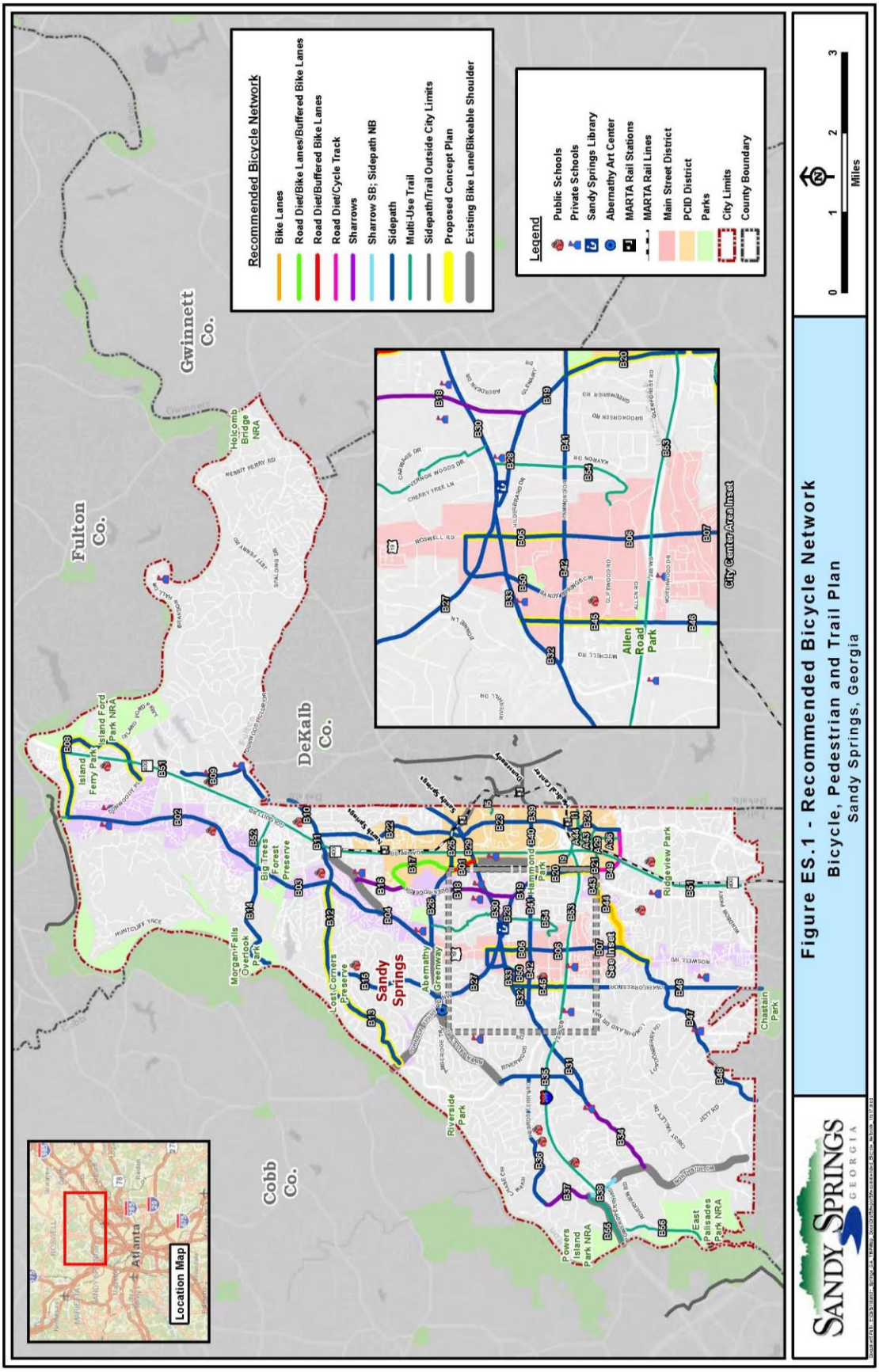
System Improvements

Sandy Springs' path system is designed to connect residential areas to schools, parks and other community uses, business centers, and to each other. Unlike parks and recreational components such as ball fields, picnic pavilions and community centers that are commonly viewed as 'residential' amenities; the City's multi-use paths are intended to be used by residents and local employees alike. There is thus a clear benefit to businesses as residents access the shops and offices in the city using the paths and employees take advantage of the paths to walk or exercise on their time off, to walk to lunch or a shop nearby, or to access local parks or recreation facilities.

The maps on the following pages are taken from the City's *Bike, Pedestrian and Trail Implementation Plan* (2014) and illustrate the multi-use path system, which incorporates an interrelated bicycle component and a pedestrian component as well as linkages to existing path assets. The system is planned to be completed by 2040.

Following the maps, Table 8 shows the length and estimated cost of each multi-use path project that is planned throughout the city, and needed to complete the system for the city's residents and businesses today and for future growth over the coming 20+ years. Table 8 also includes path projects from the 2013 Sandy Springs LCI 10-Year Update, the FY16 Capital Sidewalk Program, and the FY16 Annual Budget. In miles, the planned system improvements will involve an additional 97.54 miles (515,003 lineal feet).

The project costs shown on Table 8 have been updated to 2016 dollars from the costs included in the 2014 plan using the average ENR Construction Cost Index (CCI), as applicable based on the year each original cost estimate was made, and are rounded to the nearest hundred dollars.


Recommended Bicycle Network
Bike Lanes
Road Diet/Bike Lanes/Buffered Bike Lanes
Road Diet/Buffered Bike Lanes
Road Diet/Cycle Track
Sharrows
Sharrow SB; Sidepath NB
Sidepath
Multi-Use Trail
Sidepath/Trail Outside City Limits
Proposed Concept Plan
Existing Bike Lane/Bikeable Shoulder
Legend
Public Schools
Private Schools
Sandy Springs Library
Abernathy Art Center
MARTA Rail Stations
MARTA Rail Lines
Main Street District
PCID District
Parks
City Limits
County Boundary
Miles
Fulton Co.
Gwinnett Co.
DeKalb Co.
Cobb Co.
Sandy Springs
City Center/Area Inset
Location Map
Atlanta
Figure ES.1 - Recommended Bicycle Network
Bicycle, Pedestrian and Trail Plan
Sandy Springs, Georgia
SANDY SPRINGS GEORGIA

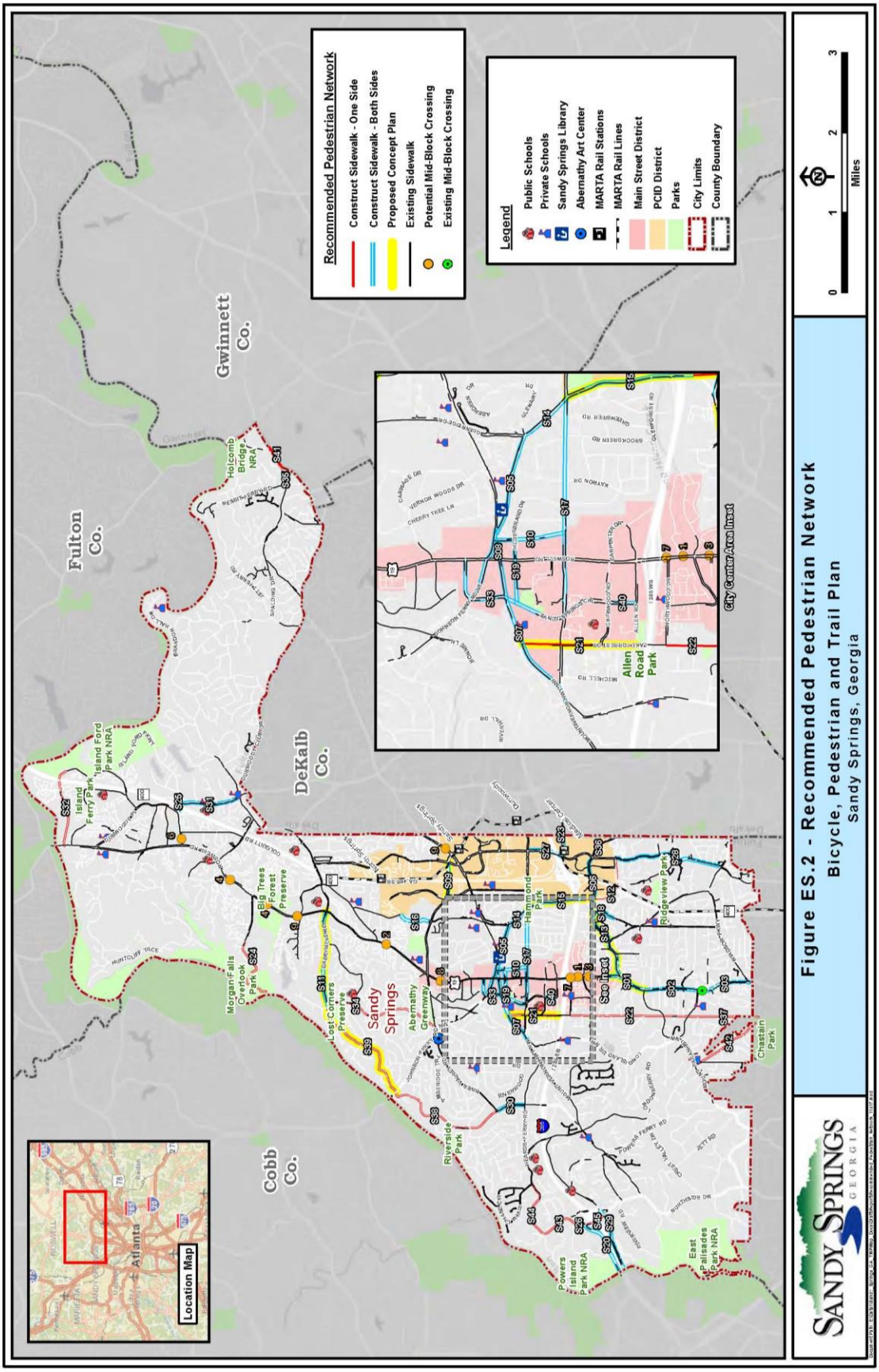

Recommended Pedestrian Network
Construct Sidewalk - One Side
Construct Sidewalk - Both Sides
Proposed Concept Plan
Existing Sidewalk
Potential Mid-Block Crossing
Existing Mid-Block Crossing
Legend
Public Schools
Private Schools
Sandy Springs Library
Abernathy Art Center
MARTA Rail Stations
MARTA Rail Lines
Main Street District
PCID District
Parks
City Limits
County Boundary
0 1 2 3
Miles
Fulton Co.
Gwinnett Co.
DeKalb Co.
Cobb Co.
City Center Area Inset
Allen Road Park
Holcomb Bridge NRA
Island Ford Park NRA
Island Ferry Park
Big Trees Forest Preserve
Morgan Falls Overlook Park
Lost Corners Preserve
Sandy Springs
Abernathy Greenway
Hammond Park
Ridgeview Park
Riverside Park
Chastain Park
Powers Island Park NRA
East Palisades Park NRA
Location Map
Atlanta
Figure ES.2 - Recommended Pedestrian Network
Bicycle, Pedestrian and Trail Plan
Sandy Springs, Georgia
SANDY SPRINGS GEORGIA

Table 8: Planned Path System Improvements

Project*	Start / End Point	Project ID	Linear Feet	Cost**
Abernathy Rd. Bicycle Project	Mount Vernon/Perimeter to Barfield	B25	3,062	$ 1,118,900
Abernathy Rd. Bicycle Project	Barfield to Roswell Rd.	B26	5,386	$ 2,166,500
Abernathy Rd. Sidewalks	Peachtree Dunwoody to Barfield	S09	1,109	$ 171,700
Barfield Rd. Bicycle Project	Abernathy to Mount Vernon	B01	1,795	$ 82,200
Bluestone Bicycle Project	Hilderbrand to Sandy Springs Pl.	----	470	*$ 99,500*
Boylston Dr. Sidewalks	Mount Vernon to Hammond	S10	2,904	$ 528,700
Brandon Mill Rd. Bicycle Project	Dalrymple to Abernathy/Johnson Ferry	B15	7,762	$ 3,133,100
Brandon Mill Rd. Sidewalks	Dalrymple to Abernathy/Johnson Ferry	S34	5,438	*$ 1,486,875*
Carpenter Dr. Sidewalks	Allen Rd. to Cliftwood Dr.	--	1,405	*$ 1,074,825*
Central-Mall Trail	Central Pkwy to City Limits (East)	I5	528	$ 172,500
Dalrymple Rd. Bicycle Project	Spalding/Trowbridge to Wildercliff	B12	8,395	$ 3,378,700
Dalrymple Rd. Sidewalks	Roswell Rd. to Wildercliff	S11	6,178	*$ 1,620,125*
Dudley Ln. Sidewalks	Powers Ferry to City Limits	S42	3,749	$ 755,500
Dunwoody Club Dr. Sidewalks	Spalding Dr. to Ex. Walk at Fenimore Cir.	--	1,310	*$ 425,750*
Glenlake Pkwy Bicycle Project	Glenridge to Abernathy/Barfield	B17	5,227	$ 240,000
Glenridge Connector Bicycle Project	Glenridge to Johnson Ferry	B21	739	$ 292,900
Glenridge Connector Bicycle Project	Johnson Ferry to Peachtree Dunwoody/Glenridge	B49	3,749	$ 351,900
Glenridge Connector Sidewalks	Glenridge to Peachtree Dunwoody/Glenridge	S12	3,802	$ 769,400
Glenridge Dr. Bicycle Project	Hammond to I-285 E Glenridge Off Ramp	B20	3,485	$ 1,392,800
Glenridge Dr. Bicycle Project	Spalding to Glenlake	B16	3,326	$ 5,000
Glenridge Dr. Bicycle Project	Glenlake to Johnson Ferry/Glenairy	B18	7,498	$ 11,100
Glenridge Dr. Bicycle Project	Johnson Ferry/Glenairy to Hammond	B19	1,584	$ 640,100
Glenridge Dr. Bicycle Project	Johnson Ferry to High Point	B43	211	$ 89,500
Glenridge Dr. Bicycle Project	High Point to Roswell Rd.	B44	4,910	$ 128,000
Glenridge Dr. Sidewalks	High Point to Roswell Rd.	S13	2,165	$ 402,300
Glenridge Dr. Sidewalks	Johnson Ferry/Glenairy to Hammond	S14	1,373	$ 248,300
Glenridge Dr. Sidewalks	Hammond to I-285 E. Glenridge Off Ramp	S15	2,798	$ 514,000
Glenridge Dr. Sidewalks	Glenlake to Abernathy	S16	3,749	$ 693,200
Glenridge Drive Trail	Royervista Johnson Ferry	A24	1,584	$ 1,024,100
Hammond Dr. Bicycle Project	City Limits to Peachtree Dunwoody	B39	1,109	$ 450,000
Hammond Dr. Bicycle Project	Peachtree Dunwoody to Barfield	B40	2,640	$ 2,089,000
Hammond Dr. Bicycle Project	Barfield to Roswell Rd.	B41	5,755	$ 2,325,500
Hammond Dr. Bicycle Project	Roswell Rd. to Mount Vernon	B42	3,696	$ 1,481,400
Hammond Dr. Sidewalks	Glenridge to Sandy Springs Cir.	S17	6,653	$ 1,335,800
Heards Ferry Rd. Bicycle Project	Northside/Winterthur to Riverside	B36	9,293	$ 3,749,100
Heards Ferry Rd. Sidewalks	Northside/Winterthur to River Chase	S44	3,379	*$ 734,800*
High Point Rd. Sidewalks	Glenridge to Tamarisk	S18	1,373	$ 247,600
Hildebrand Dr. Sidewalks	Sandy Springs Cir. to Boylston	S19	2,006	$ 365,900
Hollis Cobb Cir. Trail	Johnson Ferry to Parking Garage Driveway	A43	1,056	$ 679,100
Hollis Cobb Cir. Trail	Parking Garage Driveway to Peachtree Dunwoody	A44	528	$ 215,600
I-285 Trail	Northside to SR 400	B53	24,130	$ 9,710,700
Interstate North Pkwy Sidewalks	Northside/New Northside to City Limits	S20	3,379	*$ 870,925*
Interstate North Pkwy Trail	City Limits (West) to Northside	B55	4,118	$ 1,661,400
Johnson Ferry Rd. Bicycle Project	Glenridge/Glenairy to Roswell Rd.	B28	3,590	$ 1,435,000
Johnson Ferry Rd. Bicycle Project	Roswell Rd. to Abernathy	B27	5,386	$ 2,162,900
Johnson Ferry Rd. Sidewalks	Peachtree Dunwoody to Glenridge	S06	317	*$ 114,600*
Johnson Ferry Rd. Sidewalks	Glenridge/Glenairy to Sandy Springs Cir.	S05	4,118	$ 829,500
Johnson Ferry Rd. Sidewalks	Old Johnson Ferry to Peachtree Dunwoody	S36	1,109	$ 200,900
Johnson Ferry Rd. Trail	Glenridge to Peachtree Dunwoody/Glenridge	A29	3,379	$ 2,177,600
Lake Forrest Dr. Bicycle Project	Mount Vernon to Northwood	B45	4,118	$ 1,648,200
Lake Forrest Dr. Bicycle Project	Northwood to City Limits	B46	12,408	$ 4,983,200
Lake Forrest Dr. Sidewalks	Mount Vernon to Allen	S21	2,429	$ 493,400
Lake Forrest Dr. Sidewalks	Northwood to Long Island	S22	6,600	$ 1,329,300
Lake Forrest Dr. Sidewalks	Long Island to City Limits	S37	3,907	$ 788,600
Lake Hearn Dr. Sidewalks	Peachtree Dunwoody to City Limits	S23	1,373	$ 206,900
Lake Hearn-Medical Ctr Trail	Peachtree Dunwoody to City Limits (East)	I1	1,478	$ 377,300
Lakeside-Medical Ctr Trail	NW Corner of SR 400 Interchange to Hollis Cobb Cir.	I9	1,795	$ 6,069,200
Livable Sandy Springs Trail	Carpenter to Abernathy	B54	10,032	$ 4,034,900
Meridian Mark Rd. Trail	Glenridge Connector/Johnson Ferry	A36	1,795	$ 603,700
Morgan Falls Rd. Bicycle Project	Roswell Rd. to End	B14	8,026	$ 3,229,400
Morgan Falls Rd. Sidewalks	Harbor Pointe to End	S24	4,118	$ 760,200
Morgan Falls Trail	Roswell Rd. to City Limits (East)	B52	3,643	$ 1,465,400
Mount Paran Rd. Bicycle Project	Roswell Rd. to Powers Ferry	B47	6,917	$ 2,788,400
Mount Paran Rd. Bicycle Project	Powers Ferry to City Limits	B48	6,283	$ 2,527,800

Project*	Start / End Point	Project ID	Linear Feet	Cost**
Mount Vernon Hwy Bicycle Project	Lisa to Barfield	B29	5,122	$ 2,902,000
Mount Vernon Hwy Bicycle Project	Barfield to Johnson Ferry	B30	5,544	$ 2,231,100
Mount Vernon Hwy Bicycle Project	Northside to Powers Ferry/Mount Vernon	B34	5,914	$ 8,800
Mount Vernon Hwy Bicycle Project	Powers Ferry to City Limits	B31	5,491	$ 2,205,400
Mount Vernon Hwy Bicycle Project	Heards Ferry to Lake Forrest	B32	3,802	$ 1,535,800
Mount Vernon Hwy Bicycle Project	Lake Forrest to Johnson Ferry	B33	3,168	$ 1,279,500
Mount Vernon Hwy. Sidewalks	Long Island to Roswell Rd.	S07	4,435	$ 890,600
Mount Vernon Hwy Sidewalks	Roswell Rd. to Johnson Ferry	S08	1,109	$ 204,900
Nesbit Ferry Sidewalks	Coles Way S. to Ex. SW	--	628	$ 204,100
Northridge Rd. Sidewalks	Roberts to Dunwoody / GA400 S Northridge Off Ramp	S25	845	$ 126,300
Northside Dr. Bicycle Project	Winterthur/Heards Ferry to Riveredge	B37	3,274	$ 4,900
Northside Dr. Bicycle Project	Interstate North/New Northside to to New Northside	B38	2,112	$ 1,691,300
Northside Dr. Sidewalks	Winterthur/Heards Ferry to Riveredge	S43	2,165	$ 431,700
Northside Dr. Sidewalks	Riveredge to Interstate North/New Northside	S26	1,214	$ 227,400
Northside Dr. Sidewalks	Interstate North / New Northside to Powers Ferry	S45	686	$ 105,800
Northwood Dr. Sidewalks	Kingsport to Roswell Rd.	--	478	*$ 250,950*
Peachtree Dunwoody Bicycle Project	Spalding/Gables to Mount Vernon	B22	9,926	$ 3,992,000
Peachtree Dunwoody Bicycle Project	Spalding/Gables to Mount Vernon	B23	4,752	$ 1,922,600
Peachtree Dunwoody Bicycle Project	Spalding/Gables to Mount Vernon	B24	6,072	$ 2,448,200
Peachtree Dunwoody Sidewalks	Spalding/Gables to Mount Vernon	S27	686	$ 142,100
Peachtree Dunwoody Sidewalks	Glenridge Connector to Windsor	S28	2,059	$ 378,900
Pedestrian Trail	Mount Vernon to Sandy Springs Pl.	----	1,000	$ 148,200
Powers Ferry / River Trail	City Limits (Southwest) to Northside	B56	9,610	$ 3,869,800
Powers Ferry Sidewalks	City Limits to New Northside	S29	2,587	$ 476,800
Riverside Dr. Bicycle Project	Dalrymple/Wildercliff to Johnson Ferry	B13	7,814	$ 3,151,200
Riverside Dr. Bicycle Project	River Valley to Mount Vernon	B35	6,019	$ 3,130,800
Riverside Dr. Sidewalks	Dalrymple/Wildercliff to Johnson Ferry	S39	6,653	$ 1,222,500
Riverside Dr. Sidewalks	Johnson Ferry to River Valley	S38	7,181	*$ 1,986,650*
Riverside Dr. Sidewalks	River Valley to Heards Ferry	S30	1,056	$ 189,500
Riverside Dr. Sidewalks	I-285 to Mount Vernon	--	2,100	*$ 682,500*
Roberts Dr. Bicycle Project	Roswell Rd. to Dunwoody	B08	11,669	$ 4,686,700
Roberts Dr. Bicycle Project	Northridge to Spalding	B09	4,224	$ 1,694,500
Roberts Dr. Sidewalks	Northridge to Spalding	S31	2,323	$ 429,300
Roberts Dr. Sidewalks	Roswell Rd. to 1,000' N/O Summer Crossing	S32	4,435	*$ 1,053,975*
Roswell Rd. Bicycle Project	Roberts to 0.2 Mi. S/O Morgan Falls	B02	14,942	$ 6,003,900
Roswell Rd. Bicycle Project	0.2 Mi S/O Morgan Falls to Dalrymple	B03	4,171	$ 1,687,800
Roswell Rd. Bicycle Project	Dalrymple to Abernathy	B04	8,078	$ 3,240,700
Roswell Rd. Bicycle Project	Sandy Springs Cir. to Hammond	B05	2,798	$ 1,128,900
Roswell Rd. Bicycle Project	Hammond to Lake Placid	B06	3,696	$ 1,491,200
Roswell Rd. Bicycle Project	Lake Placid to Mount Paran	B07	4,330	$ 1,733,800
Roswell Rd. Bike/Ped Bridge	Over Chattahoochee River	T-0035	2,500	*$ 725,882*
Roswell Rd. Sidewalks	Broad/Wentworth to Mount Paran	S01	1,584	$ 289,700
Roswell Rd. Sidewalks	Mount Paran to Long Island	S02	1,478	$ 268,800
Roswell Rd. Sidewalks	Long Island to Meadowbrook	S03	2,059	$ 382,000
Sandy Springs Cir. Bicycle Project	Roswell Rd. to Hammond	B50	4,013	$ 1,606,900
Sandy Springs Cir. Sidewalks	Mount Vernon to Johnson Ferry	S33	3,432	$ 628,300
Sandy Springs Cir. Sidewalks	Cliftwood to Allen	S40	211	$ 35,300
Sandy Springs Cir. Sidewalks	Hammond Dr. to Roswell Rd.	CC-0010	4,255	*$ 602,230*
Spalding Dr. Bicycle Project	Peachtree Dunwoody to Trowbridge/Spalding	B11	1,478	$ 1,543,100
Spalding Dr. Bicycle Project	Peachtree Dunwoody to Roberts	B10	5,914	$ 2,389,300
Spalding Dr. Sidewalks	Nesbit Ferry Rd. to River Exchange Dr.	S35, S41	2,376	$ 600,000
Spalding Dr. Sidewalks	Dunwoody Rd. to Ex. Drive near Dunwoody City Limit	--	185	*$ 41,625*
Spalding Dr. Sidewalks	Stables Dr. to N. Spalding Lake Dr.	--	680	*$ 221,000*
Spalding Dr. Sidewalks	Jett Ferry Ct. to Ex. SW @ Spalding Heights Dr.	--	3,770	*$ 1,225,250*
SR 400 Trail	City Limits (South) to Roberts	B51	47,520	$ 19,122,100
Windsor Pkwy. Sidewalks	Peachtree Dunwoody Rd. to City Limit	--	1,750	*$ 481,250*
		Total System:	**515,003**	**$178,516,512**

*City of Sandy Springs Bicycle, Pedestrian and Trail Implementation Plan (2014), with the exception that "--" in the Project ID column denotes projects in the FY2016 Capital Sidewalk Program and "----" are projects in the Sandy Springs LCI 10-Year Update (2013). In addition, projects with identification numbers CC-0010 and T-0035 are in the FY16 Annual Budget.

**Construction costs only unless in *italics*. Present value (2016) calcuated using 2012-2016, 2013-2016 or 2014-2016 average ENR Construction Cost Index (CCI), as applicable based on the year the original cost estimate was made, rounded to the nearest hundred dollars. *Italicized* costs include engineering, right-of-way and construction.

Level of Service

Table 9 shows the calculation of the Level of Service for the multi-use path system. For these system improvements, the LOS is based on the future day/night population forecasted for 2040 since the entire system, as it is proposed to be expanded, will serve all of the city's residents and businesses collectively by that target year.

Table 9: Level of Service Calculation

Total Linear Feet	2040 Day/Night Population	Feet per 2040 Day/Night Pop
515,003	321,859	1.600089

To determine the LOS, the total length (in feet) of the future system improvements is divided by the day/night population expected to live or work in the city by 2040, resulting in the number of feet per person—resident or employee—that will benefit from the total path system when it is completed.

Forecasts for Service Area

Future Demand

Applying the City's Level of Service standard to the increase in the day/night population that is projected for the city by 2040 results in a figure that establishes the maximum number of path feet that could be included in an impact fee program. This maximum is shown on Table 10.

Table 10: New Growth Demand Calculation

Feet per 2040 Day/Night Pop	Day/Night Pop Increase (2016-2040)	Total Feet for New Growth
1.600089	89,283	142,861

The 'total feet for new growth' figure is determined by multiplying the Level of Service standard times the day/night population anticipated to be added to the city between 2016 and 2040. The day/night population figure is the citywide increase taken from Table 2: Service Area Forecasts.

Future Costs

As discussed above, there are specific plans for improvements to expand the multi-use path system to accommodate both existing and future development throughout the city.

Table 11 presents the City's proposed system improvement costs that will benefit the entire city and extend service to its future growth and development. Overall, then, new growth's 'proportional share' of the entire future system (142,861 feet of the total 515,003 feet to be constructed) is 27.74% of the length and therefore 27.74% of the cost of the system improvements.

Table 11: Future System Improvement Costs

Year	Facility	Linear Feet	2016 Cost*	% Impact Fee Eligible	Eligible 2016 Cost	Net Present Value**
2024						
2025	New City-Wide Path System	515,003	$ 178,516,512.00	27.74%	$ 49,520,191.96	$ 67,503,067.16
2026						
		515,003	**$ 178,516,512.00**		**$ 49,520,191.96**	**$ 67,503,067.16**

* Costs for individual projects vary (see *Planned Path System Improvements* Table). Overall average is $344 per linear foot.

** Average construction year of 2025 used. Net Present Value = 2016 cost estimate inflated to target year using the ENR Construction Cost Index (CCI), reduced to 2016 NPV using the Discount Rate.

The Net Present Value of the construction of the new multi-use paths is calculated by increasing the current (2016) estimated construction costs using the Engineering News Record's 10-year average construction cost inflation (CCI) rate, and then discounting the future amounts back to 2016 dollars using the Net Discount Rate. Since progress on the new construction will span the coming 20+ years, an 'average' construction year roughly midway through the process—2025—is used for the NPV calculation.

Public Safety

Introduction

Public safety services (fire protection and law enforcement) are provided by the City through its Fire Rescue Department, Police Department, and Municipal Court.

Service Area

The city is considered a single service area for the provision of public safety services because all residents and employees in the city have equal access to the benefits of the services provided.

Level of Service

The capital value of public safety services is based upon facility square footage, vehicles and emergency communication structures.

Fire Protection

Fire protection is provided by the City through its Fire Rescue Department. The capital value of fire protection is based upon fire stations, administrative office space, and fire apparatus (vehicles).

Emergency medical services are administered by the Fire Rescue Department, but are provided under contract to a private vendor that provides and maintains the ambulances. Emergency 911 service (ChattComm) is also provided under contract to a private vendor, which manages operations out of its stand-alone call center facility that is supported solely by 911 revenues. The facility also houses the city's Emergency Operations Center. The city is partner in a broader public safety communications radio system, the North Fulton Regional Radio System Authority (NFRRSA), that includes telecommunication towers funded by the participating cities.

Currently, public safety facilities that are owned by the City include its four fire stations with a combined square footage of 54,900, utilizing a total of 12 public safety vehicles (that is, vehicles having a service life of 10 years or more).

In addition, 13 tornado warning sirens (operated by the Fire Rescue Department) are located throughout the city, and 9 NFRRSA public safety radio towers are located across the four participating municipalities. The city's weighted share of capital contributions for the radio system (based on population, land mass, and subscriber radios) is 29.68%. That percentage multiplied by the 9 towers identifies the city's 'share' of the overall system, which is 2.67 towers.

Law Enforcement

The Police Department provides primary law enforcement throughout the city. Through a variety of active law enforcement, community outreach and educational programs, the Police Department serves all of the population and employees within the city. The Police Department headquarters and training facilities currently occupy leased space, and are proposed to be relocated to a new Public Safety Complex along with the Fire Rescue Department and Municipal Court.

Existing and Planned Improvements

Table 12 presents the current inventory of public safety facilities, vehicles, sirens and towers, as well as planned system improvements. The planned improvements include a fire training facility, 2 fire stations, and 4 fire apparatus. In addition, the proposed public safety complex is intended to accommodate Fire Rescue administration and all city law enforcement staff, functions and training space. The Police and Fire Rescue Departments and Municipal Court currently occupy leased facility

space and are slated to relocate to a larger facility. It has been determined that 106,000 square feet would be adequate to meet current and future needs of the city's public safety departments.

Table 12: Public Safety System Improvements

Description	Square Feet or Number
Existing System	
Fire Facilities	
Station 1 - Spalding Dr.	9,000
Station 2 - Johnson Ferry Rd.	16,900
Station 3 - Raider Dr.	9,000
Station 4 - Wieuca Rd.	20,000
Total Existing Floor Area	**54,900**
*Public Safety Vehicles**	
Fire Engines	2
Ladder Truck	3
Aerial Ladder Truck	1
Mini-Pumper	1
Light Rescue Vehicle	3
SWAT Vehicle	1
CSI Van	1
Total Public Safety Apparatus	**12**
Other	
Tornado Warning Siren	**13**
Public Safety Radio Tower**	**2.67**

Description	Square Feet or Number
Planned System Improvements	
New Fire Facilities	
Fire Training Facility	9,000
Panhandle Fire Station	10,000
PCID Fire Station	10,000
Total New Fire Facilities	**29,000**
Public Safety Complex	**106,000**
*New Public Safety Vehicles**	
Fire Engine	1
Ladder Truck	1
Heavy Rescue Vehicle	1
High Pressure Pumper Truck	1
Total Planned Vehicles	**4**
Total Existing and Future System	
Total Floor Area - Fire Facilities	**83,900**
Total Public Safety Vehicles	**16**
Total Warning Sirens	**13**
Total Public Safety Radio Towers	**2.67**
Public Safety Complex	**106,000**

* Vehicles having a service life of 10 years or more.

** City's share of 9 towers throughout North Fulton County.

Service Level Calculations

The level of service for public safety facilities in Sandy Springs is measured in terms of the number of public safety vehicles, the number of square feet of fire station and training space, the number of emergency tornado warning sirens, the number of communication towers serving the city, and the floor area of the new public safety complex, per day/night population in the service area.

Day/night population is used as a measure in that fire protection is a 24-hour service provided continuously to both residences and businesses in the service area. The level of service for the public safety complex is based on the planned, new facility.

Table 13 presents the calculation of the current level of service for each of the facility types.

Table 13: Level of Service Calculation

Facility	Service Population*	Level of Service
Existing & Proposed Square Feet (Fire Facilities)	**2040 Day/Night Population**	**Square Feet per Day/Night Population (Fire Facilities)**
83,900	321,859	0.2607
Existing & Proposed Public Safety Vehicles	**2040 Day/Night Population**	**Fire Apparatus per Day/Night Population**
16	321,859	0.000050
Existing Tornado Warning Sirens	**2040 Day/Night Population**	**Tornado Warning Siren per Day/Night Population**
13	321,859	0.000040
Existing Radio Towers**	**2040 Day/Night Population**	**Radio Tower per Day/Night Population**
2.67	321,859	0.000008
Proposed Square Feet (Public Safety Complex)	**2040 Day/Night Population**	**Square Feet per Day/Night Population (Public Safety Complex)**
106,000	321,859	0.329337

* The level of service for all improvements is based on the future 2040 day/night population, as the existing and future improvements are expected to serve the City for the next 20+ years.

** The city's share of the North Fulton Regional Radio Authority radio tower system (29.68% of 9 towers).

The level of service calculated for the Fire Rescue Department's floor area and the public safety vehicles is based on the 2040 day/night population. This is because the existing fire stations and public safety vehicles, combined with the proposed square footage (fire training facility and 2 new fire stations) and 4 additional vehicles identified in Table 12, are expected to serve the current and future population to 2040.

Since the coverage of each tornado warning siren is related to a geographical area (i.e., how far away the siren can be heard), it is estimated that all 13 will also serve the entire city to 2040. Accordingly, the level of service is based on the 2040 day/night population.

Like the sirens, the radio towers are expected to serve the city to 2040, making the 2040 day/night population the basis for the level of service calculation. In essence working backwards, new growth's share of the total expense for the existing sirens and towers can be determined (as shown in the following Section).

The level of service for the new public safety complex is also calculated based on the 2040 day/night population, as the facility is expected to serve the current and future population to 2040.

Forecasts for Service Area

Future Demand

The Level of Service standards from Table 13 are multiplied by the forecasted day/night population increase to produce the expected future demand in Table 14. As discussed in the previous section,

the current level of service for fire facility space and public safety vehicles is based on the entire system (existing facilities and planned improvements) that will serve the population to 2040. New growth's share of the emergency warning sirens, public safety radio towers, and the planned public safety complex is also based on the level of service that will exist in 2040, covering both existing and future populations. The result – for the sirens, towers, and new public safety complex – is that 27.74% of the sirens, towers, and the new facility are specifically needed to serve future growth and development.

The 'day/night population increase' figures are taken from Table 2: Service Area Forecasts.

Table 14: Future Demand Calculation

Level of Service	Future Population	New Growth Demand
Square Feet per Day/Night Population (Fire Facilities)	**Day/Night Population Increase (2016-40)**	**Net New Square Feet Demanded**
0.2607	89,283	23,274
Public Safety Vehicles per Day/Night Population	**Day/Night Population Increase (2016-40)**	**Net New Public Safety Vehicles Demanded**
0.000050	89,283	4.438
Tornado Warning Siren per Day/Night Population	**Day/Night Population Increase (2016-40)**	**Number of Sirens for New Growth***
0.000040	89,283	3.606
Radio Tower per Day/Night Population	**Day/Night Population Increase (2016-40)**	**Number of Towers for New Growth****
0.000008	89,283	0.74
Square Feet per Day/Night Population (Public Safety Complex)	**Day/Night Population Increase (2016-40)**	**Net New Square Feet for New Growth*****
0.329337	89,283	29,404

* New growth's 'share' of the 13 sirens is 3.606 (or 27.74% of the total 13).

** New growth's 'share' of the radio towers is .74 (or 27.74% of the 2.67 that are the city's 'share' of the 9 towers in the overall system).

*** New growth's 'share' of the building to be constructed is 29,404 sf (or 27.74% of the total 106,000 sf).

As previously shown in Table 12, the Fire Rescue Department plans to add 4 vehicles to its fleet to meet future public safety needs. This is slightly less than the 'actual' demand (4.438 vehicles) based on the forecasted population increase. Thus, new growth's share of the vehicles equates to 100% of 4 vehicles. If a fifth vehicle is acquired, it will be only partially impact fee eligible (43.8%). This is because 'more' new vehicles would be added than are technically demanded by new growth, but vehicles only come in 'whole' numbers.

Table 15 provides an annual breakdown of the public safety improvements that are planned and the future demand for facilities and equipment following the adopted level of service standards. The facility projects shown in Table 15 are based on the City's desire to increase the inventory of facilities in a balanced way; the final projects could be reconfigured, with 23,274 square feet of space for fire facilities and 29,404 square feet of the planned public safety complex ultimately being impact fee eligible.

Table 15: Future Public Safety Facility Projects

Year	Project	Total Square Feet Proposed	Eligible Square Footage	Eligible Number
2016	**Emergency Warning Sirens***			**3.606**
	Radio Towers*			**0.74**
2017				
2018	**Panhandle Fire Station**	**10,000**	**10,000**	
	Fire Engine			1
2019	Ladder Fire Truck			1
2020	*Public Safety Complex***	*106,000*	*29,404*	
	Heavy Rescue Vehicle			1
2021				
2022	**Fire Training Facility**	**9,000**	**9,000**	
2023				
2024				
2025	**PCID Fire Station****	**10,000**	**4,274**	
	High Pressure Pumper			1
2026				
2027				
2028				
2029				
2030				
2031				
2032				
2033				
2034				
2035				
2036				
2037				
2038				
2039				
2040				
	Fire Facilities:	**29,000**	**23,274**	
	Public Safety Complex:	*106,000*	*29,404*	
	Public Safety Vehicles:			4.000

* Only the impact fee eligible sirens and towers are shown.

** The impact fee eligible portion is that which will meet the needs of new growth, as determined in the the Future Demand Calculation table.

Note that a portion of the fire station project shown in 2025 is only partially impact fee eligible. Overall, only 23,274 square feet is required to serve new growth, but 29,000 square feet total is planned for the fire training facility and the 2 new fire stations. Assuming that the first 2 new facilities are 100% eligible, the third is only 42.74% eligible (providing only 4,274 square feet of the station's total 10,000 square feet to meet new growth demand). In addition, a portion of the public safety complex shown in the year 2020 is not 100% impact fee eligible; only the square footage needed to serve new growth is impact fee eligible (as shown on Table 14).

Of the emergency warning sirens and public safety radio towers in place, the portions that are eligible for impact fee consideration (i.e., new growth's 'proportional share') are shown to serve new growth. These are listed as 2016 since they already exist.

Future Costs

New facility floor area and the number of new vehicles needed to meet the demand created by new growth and development in the future are transferred from Table 15 to Table 16, including the years in which the various facility improvements are anticipated to be needed.

Table 16: Project Costs to Meet Future Demand

Year	Improvements Needed				Total Building Cost in 2016 Dollars****	Total Equipment Cost in 2016 Dollars	Impact Fee Eligible		Impact Fee Cost in 2016 Dollars	Net Present Value
	Facilities (Sq Feet)*	Public Safety Vehicles	Warning Sirens**	Radio Towers***			Building	Equipment		
2016	-	-	13	2.67	$ -	$ 4,420,984.00	-	27.74%	$ 1,226,371.53	$ 1,226,371.53
2017	-	-			$ -	$ -	-	-	$ -	$ -
2018	10,000	1			$ 4,050,400.00	$ 600,000.00	100%	100%	$ 4,650,400.00	$ 4,839,573.51
2019	-	1			$ -	$ 1,200,000.00	-	100%	$ 1,200,000.00	$ 1,257,009.25
2020	106,000	1			$ 39,054,640.00	$ 600,000.00	27.74%	100%	$ 11,433,673.82	$ 12,402,237.41
2021	-	-			$ -	$ -	-	-	$ -	$ -
2022	9,000	-			$ 3,645,360.00	$ -	100%	-	$ 3,645,360.00	$ 4,124,825.94
2023	-	-			$ -	$ -	-	-	$ -	$ -
2024	-	-			$ -	$ -	-	-	$ -	$ -
2025	10,000	1			$ 4,050,400.00	$ 675,000.00	42.74%	100%	$ 2,406,011.76	$ 2,859,366.60
2026	-	-			$ -	$ -	-	-	$ -	$ -
2027	-	-			$ -	$ -	-	-	$ -	$ -
2028	-	-			$ -	$ -	-	-	$ -	$ -
2029	-	-			$ -	$ -	-	-	$ -	$ -
2030	-	-			$ -	$ -	-	-	$ -	$ -
2031	-	-			$ -	$ -	-	-	$ -	$ -
2032	-	-			$ -	$ -	-	-	$ -	$ -
2033	-	-			$ -	$ -	-	-	$ -	$ -
2034	-	-			$ -	$ -	-	-	$ -	$ -
2035	-	-			$ -	$ -	-	-	$ -	$ -
2036	-	-			$ -	$ -	-	-	$ -	$ -
2037	-	-			$ -	$ -	-	-	$ -	$ -
2038	-	-			$ -	$ -	-	-	$ -	$ -
2039	-	-			$ -	$ -	-	-	$ -	$ -
2040	-	-			$ -	$ -	-	-	$ -	$ -
	$332 = Avg Cost per Square Foot*****				**$58,296,784.00**				**$ 24,561,817.12**	**$ 26,709,384.25**

* Includes square footage for fire-related facilities and the public safety complex.

** All 13 existing emergency warning sirens are shown, of which 3.606 (27.74%) are impact fee eligible.

*** All towers that represent the city's share of the radio communication system are shown, of which 0.74 (27.74%) are impact fee eligible.

**** Includes contingency at 15% and architectural/engineering services at 7%.

***** Includes building and land acquisition costs. Source: City of Sandy Springs (Avg costs per square foot: $320, building + $12, land acquisition), with the exception that the avg building cost per square foot for the public safety complex ($290.63 + $12 per square foot for land acquisition) is based on the 2016 *BNi Green Building Square Foot Cost Book* .

Estimated improvement costs under the 'total cost in 2016 dollars' column of Table 16 are based on the following:

- For new fire station facility space, prevailing construction costs averaging $320 per square foot plus land acquisition costs average $12 per square foot are used, reflecting cost estimates provided by the Fire Rescue Department. An exception is the construction cost for the public safety complex, which averages $290.63 based on cost estimates for similar facilities in the 2016 BNi Green Building Square Foot Cost Book. Note that a portion of the fire station project shown in the year 2025 is only partially impact fee eligible.
- For the public safety vehicles, current costs for the various vehicle categories were provided by the Fire Rescue Department.
- For the tornado warning sirens and the public safety radio towers, the actual total purchase and installation cost to the City (exclusive of federal and state assistance) is shown.

The total cost figures are then converted to 'impact fee cost in 2016 dollars' based on the percentage that each improvement is impact fee eligible. As noted above, portions of one fire station, the public safety complex, and one vehicle are not 100% impact fee eligible under the adopted LOS. As such, the costs for those improvements are reduced accordingly. In addition, the total cost for the sirens and towers is reduced to new growth's share, which is 27.74% of the total.

The Net Present Value of the cost estimates for new building construction are calculated by increasing the current (2016) impact fee costs using the Engineering News Record's 10-year average building cost inflation (BCI) rate, and then discounting this future amount back to 2016 dollars using the Net Discount Rate. For non-construction improvements (all vehicles) the currently estimated costs are inflated to their target years using the 10-year average CPI and then reduced using the Net Discount Rate to produce the Net Present Value.

Road Improvements

Introduction

The information in this chapter is derived from capital project information contained in the *Sandy Springs Fiscal Year (FY) 2016 Budget*, project data for future years based on the City's *Transportation Master Plan* (2008), the *North Fulton Comprehensive Transportation Plan* (2010) and projects identified in the City's other plans and project listings (2016).

Service Area

The service area for these road projects is defined as the entire city, in that these road projects are recognized as providing primary access to all properties within the city as part of the citywide network of principal streets and thoroughfares. All new development within the city will be served by this citywide network, such that improvements to any part of this network to relieve congestion or to otherwise improve capacity will positively affect capacity and reduce congestion throughout the city.

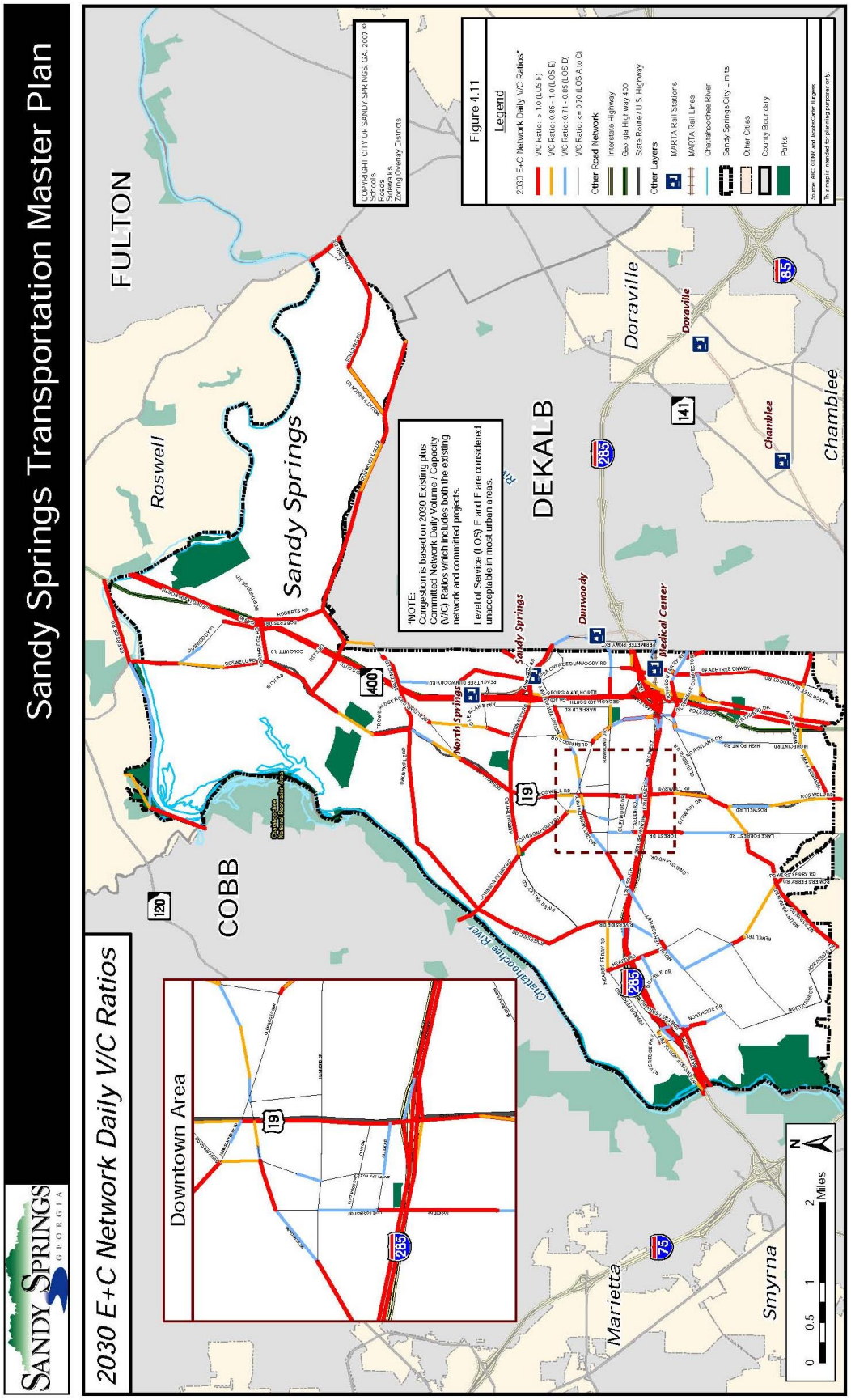
Level of Service Standards

Level of Service for roadways and intersections is measured on a 'letter grade' system that rates a road within a range of service from A to F. Level of Service A is the best rating, representing unencumbered travel; Level of Service F is the worst rating, representing heavy congestion and long delays. This system is a means of relating the connection between speed and travel time, freedom to maneuver, traffic interruption, comfort, convenience and safety to the capacity that exists in a roadway. This refers to both a quantitative measure expressed as a service flow rate and an assigned qualitative measure describing parameters. *The Highway Capacity Manual, Special Report 209*, Transportation Research Board (1985), defines Level of Service A through F as having the following characteristics:

1. LOS A: free flow, excellent level of freedom and comfort;
2. LOS B: stable flow, decline in freedom to maneuver, desired speed is relatively unaffected;
3. LOS C: stable flow, but marks the beginning of users becoming affected by others, selection of speed and maneuvering becomes difficult, comfort declines at this level;
4. LOS D: high density, but stable flow, speed and freedom to maneuver are severely restricted, poor level of comfort, small increases in traffic flow will cause operational problems;
5. LOS E: at or near capacity level, speeds reduced to low but uniform level, maneuvering is extremely difficult, comfort level poor, frustration high, level unstable; and
6. LOS F: forced/breakdown of flow. The amount of traffic approaching a point exceeds the amount that can transverse the point. Queues form, stop & go. Arrival flow exceeds discharge flow.

The traffic volume that produces different Level of Service grades differs according to road type, size, signalization, topography, condition and access.

The map on the following page, taken from the City's *Transportation Master Plan*, shows anticipated LOS on the City's thoroughfares in 2030.


Sandy Springs Transportation Master Plan
SANDY SPRINGS GEORGIA
2030 E+C Network Daily V/C Ratios
Downtown Area
FULTON
COBB
DEKALB
Roswell
Sandy Springs
Dunwoody
Doraville
Chamblee
Smyrna
Marietta
North Springs
Medical Center
Chattahoochee River
*NOTE:
Congestion is based on 2030 Existing plus Committed Network Daily Volume / Capacity (V/C) Ratios which includes both the existing network and committed projects.
Level of Service (LOS) E and F are considered unacceptable in most urban areas.
Figure 4.11
Legend
2030 E+C Network Daily V/C Ratios*
V/C Ratio : > 1.0 (LOS F)
V/C Ratio : 0.85 - 1.0 (LOS E)
V/C Ratio : 0.71 - 0.85 (LOS D)
V/C Ratio : <= 0.70 (LOS A to C)
Other Road Network
Interstate Highway
Georgia Highway 400
State Route / U.S. Highway
Other Layers
MARTA Rail Stations
MARTA Rail Lines
Chattahoochee River
Sandy Springs City Limits
Other Cities
County Boundary
Parks
Source: ARC, GDMS, and Jacobs Carter Burgess
This map is intended for planning purposes only.
COPYRIGHT CITY OF SANDY SPRINGS, GA. 2007 ©
Schools
Roads
Sidewalks
Zoning Overlay Districts
0 0.5 1 2 Miles
N

Level of Service Adopted

Consistent with generally accepted Level of Service industry standards, the City has set its Level of Service for road improvements at LOS "D" (an equivalent vehicle-to-capacity ratio of no more than 0.85), a level to which it will strive ultimately. However, interim road improvement projects that do not result in a LOS of "D" will still provide traffic relief to current and future traffic alike, and are thus eligible for impact fee funding.

All road improvement projects benefit existing and future traffic proportionally to the extent that relief from over-capacity conditions eases traffic problems for everyone. For example, since new growth by 2040 will represent a certain portion of all 2040 traffic, new growth would be responsible for that portions' cost of the road improvements.

It is noted that the cost-impact of non-Sandy Springs generated traffic on the roads traversing the city (cross commutes) is off-set by state and federal assistance. The net cost of the road projects that accrues to Sandy Springs reasonably represents (i.e., is 'roughly proportional' to) the impact on the roads by Sandy Springs residents and businesses.

The basis for the road impact fee would therefore be Sandy Springs's cost for the improvements divided by all traffic in 2040 (existing today plus new growth)—i.e., the cost per trip—times the traffic generated by new growth alone. For an individual land use, the cost per trip (above) would be applied to the number of trips that will be generated by the new development when a building permit is issued, assuring that new growth would only pay its 'fair share' of the road improvements that serve it.

Road Improvement Costs

Projects that provide road capacity that will serve new growth are shown on Table 17. This is not a list of all City capital road projects. These projects were selected for inclusion in the City's impact fee program because the specific improvements proposed will increase traffic capacity and reduce congestion to some extent, whether through road widening, improved intersection operations or upgraded signalization.

The cost figures in Table 17 are expressed in current (2016) dollars (including the 'Net City Cost') and in Net Present Value. The Net Present Value of each cost estimate for each future road improvement is calculated by projecting the current (2016) estimated construction cost to the year of completion using the Engineering News Record's 10-year average construction cost inflation (CCI) rate, and then discounting this future amount back to 2016 dollars using the Net Discount Rate.

Table 17: Road Projects and Estimated Costs – Current Dollars and Net Present Value

Project Description	Estimated Total Cost*	Total City Cost**	Expenditures to Date***	Net City Cost	Projected Year of Completion	Net Present Value****
Johnson Ferry Rd. Widening & Intersection Improvements (Sandy Springs Cir. to Mount Vernon Hwy.)	$ 27,133,500	$ 13,355,657	$ 1,436,039	$ 11,919,618	2019	$ 13,216,285
Hammond Dr. Road Widening (Roswell Rd. to Glenridge Dr.)	60,000,000	60,000,000	1,649,698	58,350,302	2025	79,539,763
Hammond Dr. Road Widening (SR400 to Dunwoody city limits)	10,000,000	10,000,000	-	10,000,000	2027	14,602,904
Intersection - Glenridge Dr. @ Roswell Rd.	2,587,000	1,325,000	198,787	1,126,213	2020	1,292,459
Abernathy Rd. Widening (Roswell Rd. to Barfield Rd.)	20,000,000	20,000,000	-	20,000,000	2026	28,217,608
Boylston Rd. Connector	4,713,800	4,713,800	1,321,927	3,391,873	2017	3,510,659
Glenridge Dr. Widening (Roswell Rd. to Glenridge Connector)	27,331,600	27,331,600	-	27,331,600	2027	39,912,073
Sandy Springs Cir. / I-285 Bridge	40,000,000	8,000,000	-	8,000,000	2031	13,406,805
Barfield Rd. Widening (Hammond Dr. to Mount Vernon Hwy.)	19,572,200	19,572,200	-	19,572,200	2030	31,690,270
Johnson Ferry Capacity Imps (Abernathy to Sandy Springs Cir.)	579,100	579,100	-	579,100	2022	711,947
Johnson Ferry Capacity Imps (Mount Vernon Rd. to Glenridge Dr.)	5,443,200	5,443,200	-	5,443,200	2028	8,227,020
Intersection - Roswell Rd. @ Roberts Dr.	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ North River Pkwy.	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ Hightower Trail	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ Pitts Rd.	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ Morgan Falls Rd.	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ Trowbridge Rd.	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ Dalrymple Rd.	1,239,200	247,840	-	247,840	2020	284,425
Intersection - Roswell Rd. @ Mount Paran Rd.	1,239,200	247,840	-	247,840	2019	274,801
Intersection - Glenridge Dr. @ Johnson Ferry Rd.	1,389,800	1,389,800	-	1,389,800	2022	1,708,624
Intersection - Hammond Dr. @ Lake Forrest Dr.	1,389,800	1,389,800	-	1,389,800	2022	1,708,624
Intersection - Mount Paran Rd. @ Powers Ferry Rd.	1,389,800	1,389,800	-	1,389,800	2022	1,708,624
Intersection - Spalding Dr. @ Pitts Rd.	1,389,800	1,389,800	-	1,389,800	2022	1,708,624
Intersection -Spalding Dr. @ Jett Ferry Rd.	1,389,800	1,389,800	-	1,389,800	2022	1,708,624
Spalding Dr. Widening (Spalding / Winters Chapel)	3,283,400	1,641,700	-	1,641,700	2028	2,481,316
IJR for new I-285 Interchange (half interchange at Powers Ferry Rd)	1,000,000	1,000,000	-	1,000,000	2018	1,071,268
Expansion of Advanced Traffic Management System (ATMS)	3,150,000	3,150,000	-	3,150,000	2019	3,492,671
	$ 241,656,400	**$ 185,043,977**	**$ 4,606,451**	**$ 180,437,526**		**$ 252,181,941**

* In Present Value (2016) dollars, calculated from year originally proposed - 2008 Transportation Plan, North Fulton CTP (2010) or current budget or plan (2016).

** Total cost of project less grants or other non-city assistance. If not shown at 100%, the city's share is assumed to be 20% of the total cost (with the exception that the Spalding Dr. Widening is 50% due to shared costs with the City of Peachtree Corners).

*** City (capital) funds expended on project.

**** Net Present Value = 2016 cost estimate inflated to target year using the ENR Construction Cost Index, reduced to 2016 NPV using the Discount Rate.

Eligible Costs

As discussed thoroughly in the *Traffic Demand* section of the Appendix, new growth and development will represent 28.7% of the traffic on Sandy Springs's road network in 2040. To that extent, new growth's fair share of the road project costs that are attributed to new growth are shown on the following Table 18.

Table 18: Eligible Cost Calculation - Road Projects

Project	Net Present Value	% Impact Fee Eligible*	New Growth Cost
Johnson Ferry Rd. Widening & Intersection Improvements (Sandy Springs Cir. to Mount Vernon Hwy.)	$ 13,216,285	28.7%	$ 3,798,722
Hammond Dr. Road Widening (Roswell Rd. to Glenridge Dr.)	79,539,763	28.7%	22,861,904
Hammond Dr. Road Widening (SR400 to Dunwoody city limits)	14,602,904	28.7%	4,197,274
Intersection - Glenridge Dr. @ Roswell Rd.	1,292,459	28.7%	371,488
Abernathy Rd. Widening (Roswell Rd. to Barfield Rd.)	28,217,608	28.7%	8,110,513
Boylston Rd. Connector	3,510,659	28.7%	1,009,059
Glenridge Dr. Widening (Roswell Rd. to Glenridge Connector)	39,912,073	28.7%	11,471,822
Sandy Springs Cir. / I-285 Bridge	13,406,805	28.7%	3,853,483
Barfield Rd. Widening (Hammond Dr. to Mount Vernon Hwy.)	31,690,270	28.7%	9,108,651
Johnson Ferry Capacity Imps (Abernathy to Sandy Springs Cir.)	711,947	28.7%	204,633
Johnson Ferry Capacity Imps (Mount Vernon Rd. to Glenridge Dr.)	8,227,020	28.7%	2,364,671
Intersection - Roswell Rd. @ Roberts Dr.	284,425	28.7%	81,751
Intersection - Roswell Rd. @ North River Pkwy.	284,425	28.7%	81,751
Intersection - Roswell Rd. @ Hightower Trail	284,425	28.7%	81,751
Intersection - Roswell Rd. @ Pitts Rd.	284,425	28.7%	81,751
Intersection - Roswell Rd. @ Morgan Falls Rd.	284,425	28.7%	81,751
Intersection - Roswell Rd. @ Trowbridge Rd.	284,425	28.7%	81,751
Intersection - Roswell Rd. @ Dalrymple Rd.	284,425	28.7%	81,751
Intersection - Roswell Rd. @ Mount Paran Rd.	274,801	28.7%	78,985
Intersection - Glenridge Dr. @ Johnson Ferry Rd.	1,708,624	28.7%	491,105
Intersection - Hammond Dr. @ Lake Forrest Dr.	1,708,624	28.7%	491,105
Intersection - Mount Paran Rd. @ Powers Ferry Rd.	1,708,624	28.7%	491,105
Intersection - Spalding Dr. @ Pitts Rd.	1,708,624	28.7%	491,105
Intersection - Spalding Dr. @ Jett Ferry Rd.	1,708,624	28.7%	491,105
Spalding Dr. Widening (Spalding / Winters Chapel)	2,481,316	28.7%	713,198
IJR for new I-285 Interchange (half interchange at Powers Ferry Rd)	1,071,268	28.7%	307,912
Expansion of Advanced Traffic Management System (ATMS)	3,492,671	28.7%	1,003,889
	$ 252,181,941		**$ 72,483,990**

* See the *Traffic Demand* section in the Appendix.

Exemption Criteria

The Georgia Development Impact Fee Act provides that the City's "impact fee ordinance may exempt all or part of particular development projects from development impact fees if:

(1) Such projects are determined to create extraordinary economic development and employment growth or affordable housing;

(2) The public policy which supports the exemption is contained in the municipality's or county's comprehensive plan; and

(3) The exempt development project's proportionate share of the system improvement is funded through a revenue source other than development impact fees."

The following Exemption Policy is included in this CIE and thus becomes part of the City's Comprehensive Plan:

> The City of Sandy Springs recognizes that certain office, retail trade, hospitality and other business development projects provide extraordinary benefit in support of the economic advancement of the city's citizens over and above the access to jobs, goods and services that such uses offer in general. To encourage such development projects, the Mayor and City Council may consider granting a reduction in the impact fee for such a development project upon the determination and relative to the extent that the business or project represents extraordinary economic development and employment growth of public benefit to Sandy Springs, in accordance with exemption criteria the City may adopt by ordinance. It is also recognized that the cost of system improvements otherwise foregone through exemption of any impact fee must be funded through revenue sources other than impact fees.

While this policy provides that exemption criteria may be approved by the City Council as part of its Impact Fee Ordinance, the adoption of such criteria is elective on the part of the City Council and may or may not be activated through inclusion in the Ordinance.

Annual CIE Review and Reports

As part of an impact fee program, State law requires that the program be reviewed at least once a year after adoption and that an annual report "describing the amount of any development impact fees collected, encumbered, and used during the preceding year by category of public facility and service area" be prepared.

Annual CIE Update

To facilitate the annual report requirement, DCA's *Development Impact Fee Compliance Requirements* sets out the parameters for the report, which it calls the Annual CIE Update. To complete the update, two elements are required:

1. **Financial Report**. The City must provide a Financial Report—based on the City's most recent annual audit—that shows the amount of impact fees collected, expended, encumbered, or saved for the year. The funds expended and encumbered are matched up with the projects funded.
2. **Community Work Program**. The 5-Year Community Work Program (CWP) is a component of the City's *Comprehensive Plan*. If the City collects impact fees, the CWP must be updated annually to maintain its 5-year horizon (by adding a new last year and dropping the year just passed). The CWP describes the anticipated capital improvements to be undertaken in that timeframe. Estimated project costs are included, and sources of funding are identified. For impact fee eligible projects, the percentage of funds expected from impact fees must be shown.

The DCA guidelines require that the Annual CIE Update report be submitted to ARC and the Dept. of Community Affairs each year. This report is to include the Financial Report and the update to the Community Work Program described above.

CIE Amendments

Beyond the required Annual Update, a full amendment of the CIE will sometimes be in order. The population and employment forecasts, any debt service calculations, and tax base forecasts should be reviewed. Any changes in the basic assumptions of the CIE should be reflected in a full amendment of the CIE. If projects or project costs have changed, or if City policies have changed (i.e. a change in the adopted level of service), then the CIE would need to be amended. By law, the City can charge no more than the 'fair share' of capital improvements to the new development served by those facilities. The methodology of the CIE can be used to re-calculate the impact fee amount, based on any changes made.

DCA's current *Minimum Standards and Procedures for Local Comprehensive Planning* require that a community's Comprehensive Plan must be updated every 5 years, based on a schedule prepared by DCA. (Sandy Springs's next due date is to adopt its Comprehensive Plan update by the end of October, 2017.) Since a CIE is a required chapter in any Comprehensive Plan for a community that has adopted impact fees, an amendment to the CIE itself following the 5-year schedule would be appropriate. Alternately, a CIE can be amended at any time that changing conditions warrant, and inserted into the subsequent 5-year Comprehensive Plan update accordingly.

Community Work Program

The City is scheduled to update its Comprehensive Plan in 2017, which will entail a new Community Work Plan (CWP) covering the years 2017 to 2021.

Because the City's CWP is required to be updated with the impact fee eligible projects anticipated to be undertaken over the coming 5 years, the following listing of impact fee projects is adopted as an Addendum to the CWP through adoption of this Capital Improvements Element. The listing includes the year 2016 to account for projects anticipated to begin prior to 2017.

In 2017, the new Community Work Program within the Comprehensive Plan update will be revised for all project activities, including the specific impact fee eligible projects below.

5-Year Work Program Addendum: Impact Fee Eligible Projects

Project Description	2016	2017	2018	2019	2020	2021	Responsible Party (City Dept)	Estimated Cost	Funding Source	Notes/ Explanation
Parks and Recreation										
1 new park walking trail at Abernathy-Greenway Linear Park	X	X					Recreation and Parks	$115,107	96.24% impact fees; General Fund	Capital Project #P0002
4 new tennis courts at Sandy Springs Tennis Center				X	X		Recreation and Parks	$424,320	58.32% impact fees; General Fund	Addition of courts to existing tennis facility; Capital Project #P0006
Old Riverside Drive Park improvements:							Recreation and Parks	$721,276 total:	Impact fees and General Fund:	Capital Project #P0019
1 new playground			X	X				$116,388	96.24% impact fees; General Fund	
1 new grassed playfield			X	X				$155,074	42.77% impact fees; General Fund	
2 new picnic shelters			X	X				$139,568	92.67% impact fees; General Fund	
1 new restroom building			X	X				$310,246	85.54% impact fees; General Fund	
1 new park walking trail at Crooked Creek Park		X	X				Recreation and Parks	$115,107	96.24% impact fees; General Fund	Capital Project #P0020
1 new park walking trail at Windsor Meadows Park	X	X					Recreation and Parks	$115,107	96.24% impact fees; General Fund	Capital Project #P0021
Sandy Springs Cir. sidewalks (Hammond Rd. to Roswell Rd.)	X	X	X				Public Works	$602,230	27.74% impact fees; General Fund	Capital Project #CC0010

Project Description	2016	2017	2018	2019	2020	2021	Responsible Party (City Dept)	Estimated Cost	Funding Source	Notes/ Explanation
Roswell Rd. sidewalks (Broad/Wentworth to Mount Paran)	X	X	X				Public Works	$289,700	27.74% impact fees; General Fund	Capital Project #T0019
Roswell Rd. bike/ped bridge (over Chattahoochee River)	X	X	X	X	X		Public Works	$725,882	27.74% impact fees; General Fund	Capital Project #T0035
Dudley Ln. sidewalks (Powers Ferry to City Limits)	X	X					Public Works	$755,500	27.74% impact fees; General Fund	
Glenridge Dr. sidewalks (High Point to Roswell Rd.)	X	X	X	X			Public Works	$402,300	27.74% impact fees; General Fund	To be completed in phases
Spalding Dr. sidewalks (Dunwoody Rd. to Ex. Drive near Dunwoody city limits)	X	X					Public Works	$41,625	27.74% impact fees; General Fund	
Johnson Ferry Rd. sidewalks (Peachtree Dunwoody to Glenridge)		X	X				Public Works	$114,600	27.74% impact fees; General Fund	
Windsor Pkwy sidewalks (Peachtree Dunwoody Rd. to city limits)		X	X				Public Works	$481,250	27.74% impact fees; General Fund	
Northwood Dr. sidewalks (Kingsport to Roswell Rd.)		X	X				Public Works	$250,950	27.74% impact fees; General Fund	
Spalding Dr. sidewalks (Nesbit Ferry to River Crossing Dr.)		X	X				Public Works	$600,000	27.74% impact fees; General Fund	To be completed in phases
Brandon Mill Rd. sidewalks (Dalrymple to Abernathy/Johnson Ferry)			X	X	X	X	Public Works	$1,486,875	27.74% impact fees; General Fund	To be completed in phases
Dunwoody Club Dr. sidewalks (Spalding Dr. to Ex. Walk at Fenimore Cir.)			X	X			Public Works	$425,750	27.74% impact fees; General Fund	
Interstate North Pkwy sidewalks (Northside/New Northside to City Limits)				X	X		Public Works	$870,925	27.74% impact fees; General Fund	
Roberts Dr. sidewalks (Northridge to Spalding)				X	X		Public Works	$429,300	27.74% impact fees; General Fund	To be completed in phases

Project Description	2016	2017	2018	2019	2020	2021	Responsible Party (City Dept)	Estimated Cost	Funding Source	Notes/ Explanation
Dalrymple Rd. sidewalks (Roswell Rd. to Wilder-cliff)					X	X	Public Works	$1,620,125	27.74% impact fees; General Fund	To be complet-ed in phases
Public Safety										
Construct Panhandle Fire Station			X	X			Fire / Admin-istration	$4,050,400	100% impact fees	
Purchase fire engine			X				Fire Rescue	$600,000	100% impact fees	
Purchase ladder fire truck				X			Fire Rescue	$1,200,000	100% impact fees	
Construct Public Safety Complex					X	X	Fire/Police/ Administra-tion	$39,054,640	27.74% impact fees; General Fund	
Purchase heavy rescue vehicle					X		Fire Rescue	$600,000	100% impact fees	
Road Improvements										
Bolyston Rd. Connector		X	X				Public Works	$3,510,659	28.7% impact fees; General Fund	Capital Project #T0058
IJR for new I-285 half-interchange at Powers Ferry Rd.			X	X			Public Works	$1,071,268	28.7% impact fees; General Fund	Capital Project #T0056
Expansion of Advanced Traffic Management System (ATMS)				X			Public Works	$3,492,671	28.7% impact fees; General Fund	
Johnson Ferry Rd. wid-ening and intersection improvements				X	X	X	Public Works	$13,216,285	28.7% impact fees; General Fund	Sandy Springs Cir. to Mount Vernon Hwy; Capital Project #T-0011
Intersection - Roswell Rd. @ Mount Paran Rd.				X			Public Works	$274,801	28.7% impact fees; General Fund	
Intersection - Roswell Rd. @ Roberts Dr.					X		Public Works	$284,425	28.7% impact fees; General Fund	
Intersection - Roswell Rd. @ North River Pkwy.					X		Public Works	$284,425	28.7% impact fees; General Fund	
Intersection - Roswell Rd. @ Hightower Trail					X		Public Works	$284,425	28.7% impact fees; General Fund	

Project Description	2016	2017	2018	2019	2020	2021	Responsible Party (City Dept)	Estimated Cost	Funding Source	Notes/ Explanation
Intersection - Roswell Rd. @ Pitts Rd.					X		Public Works	$284,425	28.7% impact fees; General Fund	
Intersection - Roswell Rd. @ Morgan Falls Rd.					X		Public Works	$284,425	28.7% impact fees; General Fund	
Intersection - Roswell Rd. @ Trowbridge Rd.					X		Public Works	$284,425	28.7% impact fees; General Fund	
Intersection - Roswell Rd. @ Dalrymple Rd.					X		Public Works	$284,425	28.7% impact fees; General Fund	

Glossary

The following terms are used in this and other impact fee reports. Where possible, the definitions are taken directly from the Development Impact Fee Act.

ARC: The Atlanta Regional Commission.

Capital improvement: an improvement with a useful life of ten years or more, by new construction or other action, which increases the service capacity of a public facility.

Capital improvements element: a component of a comprehensive plan adopted pursuant to Chapter 70 of the Development Impact Fee Act which sets out projected needs for system improvements during a planning horizon established in the comprehensive plan, a schedule of capital improvements that will meet the anticipated need for system improvements, and a description of anticipated funding sources for each required improvement.

DCA: The Georgia Department of Community Affairs.

Development: any construction or expansion of a building, structure, or use, any change in use of a building or structure, or any change in the use of land, any of which creates additional demand and need for public facilities.

Development impact fee: a payment of money imposed upon development as a condition of development approval to pay for a proportionate share of the cost of system improvements needed to serve new growth and development.

Eligible facilities: capital improvements in one of the following categories:

(A) Water supply production, treatment, and distribution facilities;

(B) Waste-water collection, treatment, and disposal facilities;

(C) Roads, streets, and bridges, including rights of way, traffic signals, landscaping, and any local components of state or federal highways;

(D) Storm-water collection, retention, detention, treatment, and disposal facilities, flood control facilities, and bank and shore protection and enhancement improvements;

(E) Parks, open space, and recreation areas and related facilities;

(F) Public safety facilities, including police, fire, emergency medical, and rescue facilities; and

(G) Libraries and related facilities.

Impact cost: the proportionate share of capital improvements costs to provide service to new growth, less any applicable credits.

Impact fee: the impact cost plus surcharges for program administration and recoupment of the cost to prepare the Capital Improvements Element.

Level of service: a measure of the relationship between service capacity and service demand for public facilities in terms of demand to capacity ratios or the comfort and convenience of use or service of public facilities or both.

Project improvements: site improvements and facilities that are planned and designed to provide service for a particular development project and that are necessary for the use and convenience of

the occupants or users of the project and are not system improvements. The character of the improvement shall control a determination of whether an improvement is a project improvement or system improvement and the physical location of the improvement on site or off site shall not be considered determinative of whether an improvement is a project improvement or a system improvement. If an improvement or facility provides or will provide more than incidental service or facilities capacity to persons other than users or occupants of a particular project, the improvement or facility is a system improvement and shall not be considered a project improvement. No improvement or facility included in a plan for public facilities approved by the governing body of the municipality or county shall be considered a project improvement.

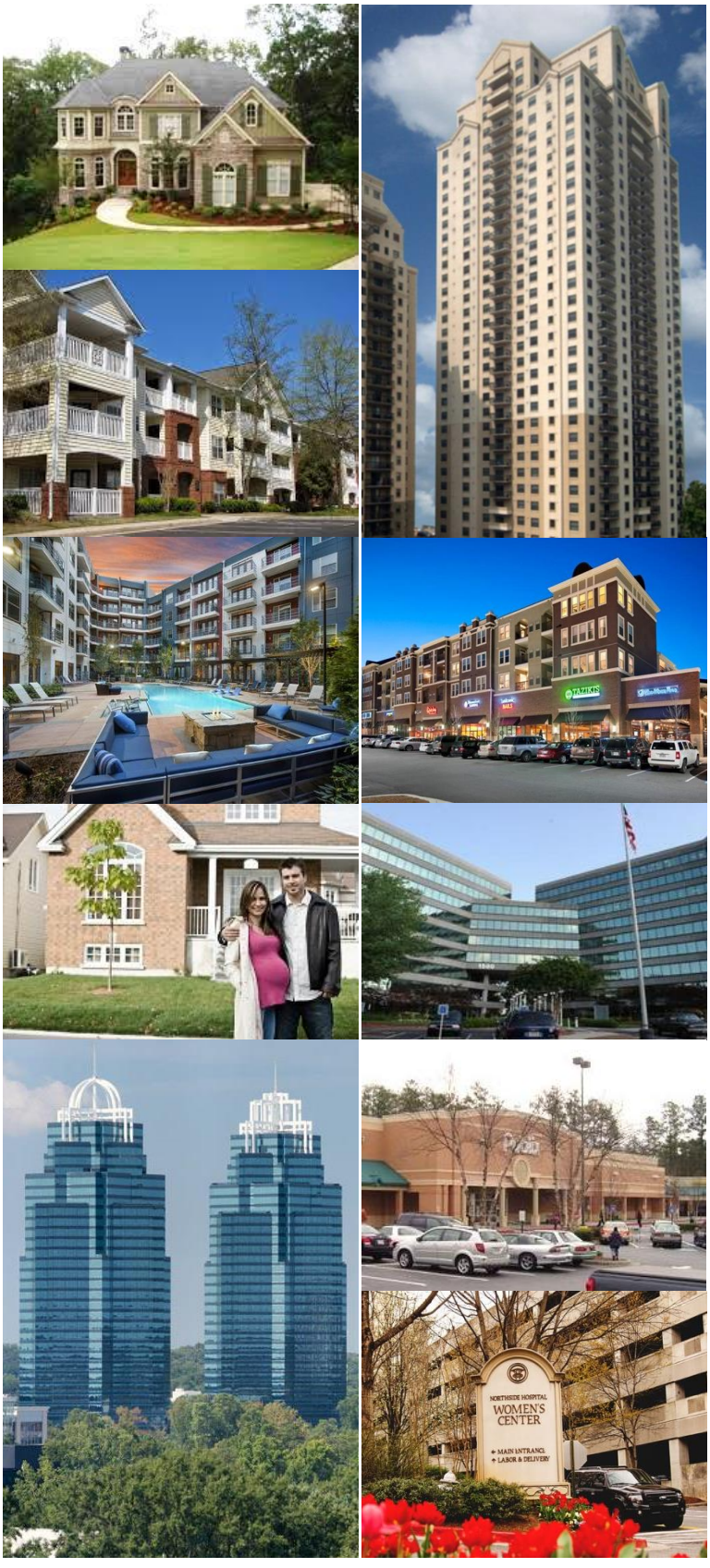
Proportionate share: means that portion of the cost of system improvements which is reasonably related to the service demands and needs of the project.

Rational nexus: the clear and fair relationship between fees charged and services provided.

Service area: a geographic area defined by a municipality, county, or intergovernmental agreement in which a defined set of public facilities provide service to development within the area. Service areas shall be designated on the basis of sound planning or engineering principles or both.

System improvement costs: costs incurred to provide additional public facilities capacity needed to serve new growth and development for planning, design and engineering related thereto, including the cost of constructing or reconstructing system improvements or facility expansions, including but not limited to the construction contract price, surveying and engineering fees, related land acquisition costs (including land purchases, court awards and costs, attorneys' fees, and expert witness fees), and expenses incurred for qualified staff or any qualified engineer, planner, architect, landscape architect, or financial consultant for preparing or updating the capital improvement element, and administrative costs, provided that such administrative costs shall not exceed 3 percent of the total amount of the costs. Projected interest charges and other finance costs may be included if the impact fees are to be used for the payment of principal and interest on bonds, notes, or other financial obligations issued by or on behalf of the municipality or county to finance the capital improvements element but such costs do not include routine and periodic maintenance expenditures, personnel training, and other operating costs.

System improvements: capital improvements that are public facilities and are designed to provide service to the community at large, in contrast to 'project improvements.'



SANDY SPRINGS
GEORGIA

Impact Fee Program Update

APPENDIX

Population Forecasts
Housing Forecasts
Employment Forecasts
Traffic Demand

ROSS+associates
urban planning & plan implementation

in association with

amec foster wheeler

Sandy Springs Impact Fee Program Update

APPENDIX

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Summary of Forecasts

Population, Housing and Employment Forecasts

	Population	Households	Housing Units	Jobs
2016	105,666	50,693	56,226	126,910
2017	107,545	51,744	57,392	128,496
2018	109,425	52,772	58,532	130,102
2019	111,305	53,791	59,663	131,728
2020	113,186	54,809	60,792	133,374
2021	115,067	55,824	61,918	135,041
2022	116,948	56,776	62,973	136,729
2023	118,830	57,699	63,997	138,438
2024	120,712	58,603	65,000	140,167
2025	122,595	59,494	65,988	141,919
2026	124,477	60,373	66,963	143,693
2027	126,361	61,246	67,931	145,489
2028	128,244	62,108	68,887	147,307
2029	130,128	62,952	69,824	149,148
2030	132,013	63,776	70,738	151,012
2031	133,898	64,594	71,645	152,899
2032	135,783	65,402	72,541	154,809
2033	137,669	66,202	73,428	156,744
2034	139,555	67,010	74,325	158,703
2035	141,441	67,831	75,235	160,684
2036	143,328	68,682	76,179	162,692
2037	145,215	69,564	77,157	164,726
2038	147,102	70,473	78,166	166,785
2039	148,990	71,409	79,204	168,869
2040	150,879	72,375	80,275	170,980

Year	Housing Units (Recreation & Parks)	Day/Night Population (Public Safety)
2016	56,226	232,576
2017	57,392	236,041
2018	58,532	239,527
2019	59,663	243,033
2020	60,792	246,560
2021	61,918	250,108
2022	62,973	253,677
2023	63,997	257,268
2024	65,000	260,879
2025	65,988	264,514
2026	66,963	268,170
2027	67,931	271,850
2028	68,887	275,551
2029	69,824	279,276
2030	70,738	283,025
2031	71,645	286,797
2032	72,541	290,592
2033	73,428	294,413
2034	74,325	298,258
2035	75,235	302,125
2036	76,179	306,020
2037	77,157	309,941
2038	78,166	313,887
2039	79,204	317,859
2040	80,275	321,859
Increase:	**24,049**	**89,283**

Service Area Forecasts

For recreation facilities and park lands, the Level of Service standards are based on the number of housing units in the city. In contrast, Public Safety (Fire Protection and Police Services) combines population and employment into a 'day-night' population to reflect their 24-hour service demand. Road improvement fees, of course, are based on traffic demand calculations resulting from housing unit and employment growth.

Market Demand

An exhaustive market demand study was prepared as part of the Comprehensive Plan Update process by a leading national real estate advisory company, Robert Charles Lesser & Company.[1]

The report covers the 2015-2035 time frame, and includes household demand forecasts as well as forecasted demand for retail and office floor area and hotel rooms. All of the demand forecasts address both a 'baseline' and an 'aggressive growth' scenario (labeled as 'low' and 'high' forecasts for simplicity, below).

Table 1 is based on the RCLCO market demand forecasts, and translates those forecasts into population and employment figures, which are necessary for calculating impact fees.

Table 1: Market Demand 2015-2035

	2015*	2035 Total	
		Low	High
Total Population	98,184	136,976	154,662
Total Households	44,454	62,066	70,096
Retail Employment	6,454	7,683	8,217
Office Employment	120,636	143,664	162,048
Hotel Employment	1,187	3,638	3,638
Total Employment	128,276	154,984	173,902

* 2015 poplation and households taken from RCLCO Market Report. Nonresidential employment calculated using 2015 occupied floor area and hotel rooms in Market Report.

Table 1 shows the population and the number of households in 2015, taken from the Market Report. To convert the number of households into future resident population, the city's population-per-household averages from the 2010 Census were used (being the latest available). Overall, the 2010 Census averages compare favorably with the average household size of 2.20 used in the Market Report to 2035.

The Market Report also projected retail and office floor area and hotel rooms from 2015 to 2035 for the 'low' (baseline) and 'high' (aggressive growth) scenarios.

To convert retail floor area and the number of hotel rooms into employment, average employees-per-1,000-square feet of retail and employees-per-hotel room were derived from the latest edition of the *Trip Generation* manual, a universally used resource.[2] For office employment, the Market Report determined that each new employee generates 184 square feet of floor area, which equates to 5.43 employees per 1,000 square feet.

These resulting 'new population' and 'new employment' increases for each scenario are added to the 2015 totals to arrive at totals for 2035.

There are some dissonances with the more detailed population, housing unit and employment forecasts made in this Appendix for impact fee purposes, including the time frame covered, the 2015 population and number of households estimates, and the 2015 'existing' employment figures. However, the figures from the Market Report provide useful and professionally prepared brackets between the 'low' and 'high' scenarios to guide the results of the more detailed forecasts in this Appendix, and to provide a 'reality check' between market demand and projected growth trends.

[1] *Sandy Springs Comprehensive Plan: RCLCO Market Report*, Robert Charles Lesser & Company, October 29, 2015.
[2] *Trip Generation*, Institute of Transportation Engineers, 9th Ed.

Population Forecasts

The purpose of the analysis that follows is to select the most appropriate population forecast for Sandy Springs, which will be used in establishing Level of Service calculations for the City's impact fee program update. The population forecasts will subsequently influence the housing unit forecasts used in this Update.

To accomplish this, several statistical projection approaches were prepared for comparison and consideration. Historic city population data from the US Bureau of the Census were used extensively as benchmarks from the past and considered in two different timeframes. Reference is also made to the forecasts prepared by the Atlanta Regional Commission in support of the latest regional plan, which extends to 2040.[3]

The various approaches presented in the methodology below are:

- 2000–2014 Census population data projected to 2040 using three different trend line regression methods.
- Nearer term 2006–2014 Census population data projected to 2040, also using three different trend line regression methods.
- An analysis of the regional forecasts prepared by ARC compared to past trends and most recent population estimates by the Census Bureau.

Conclusion

Sandy Springs' population growth proceeded at a relatively steady pace during the past decade, and 'up-ticked' in 2014.[4] Building permitting for housing units has totaled more than every other city in the northern part of the county, particularly for multi-family units, since 2013. Sandy Springs commands a unique position for future growth due to the city's attraction for mid-rise and high-rise multi-family developments in such 'hot' market areas as Perimeter Center, Roswell Road at Windsor Parkway, the creation of the new City Center currently under way, and the living-working initiatives in the Roswell Road LCI Corridor. Recent major development approvals and prospective development announcements in the city, along with post-recession financing opportunities and improving market conditions, suggest that this trend will continue for some time to come. Future population growth in the coming 24 years to 2040 is expected to continue within the city at a pace at least equal to the historic growth rate experienced over the past decade. The Great Recession is over in Sandy Springs. This is reflected in the city's rebound in building permit activity in 2013, 2014 and 2015, and the flurry of development commitments and optimism that have occurred in recent times.

Alternate Population Forecasts

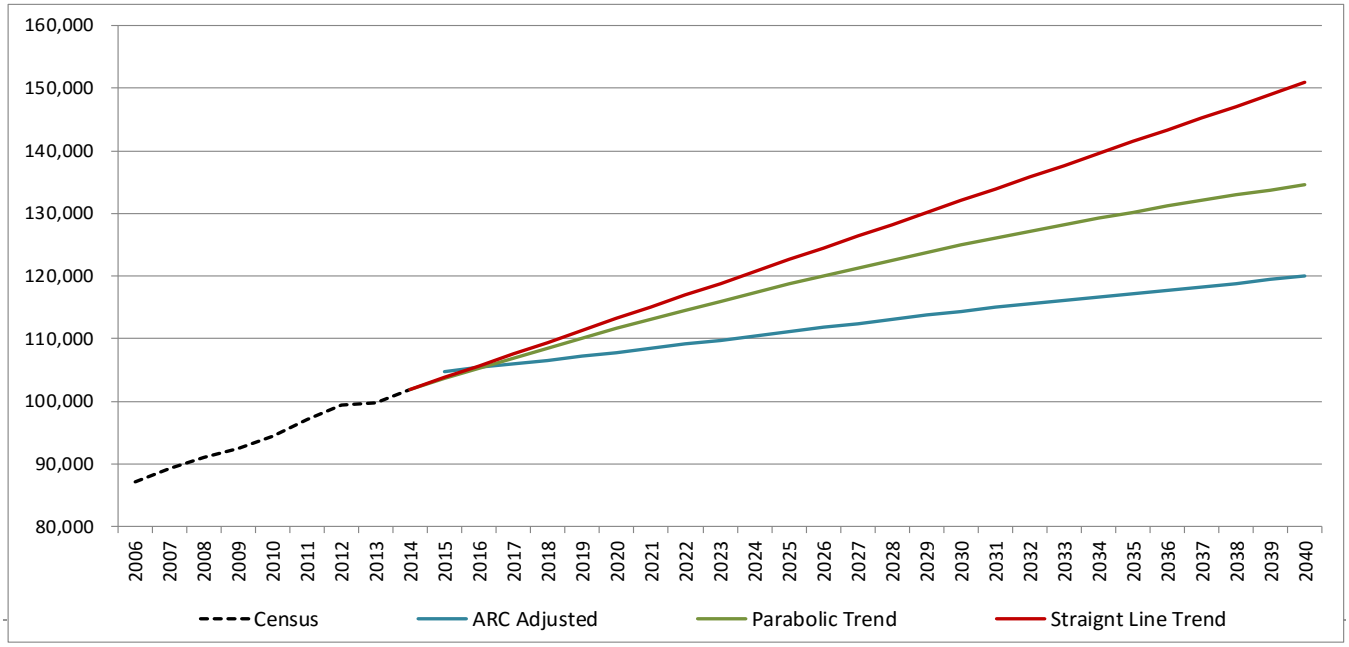
The table and graph below summarize the results of the three forecasting approaches described above and detailed in the following description of the methodology.

[3] *The Atlanta Region's Plan*, Atlanta Regional Commission, 2016.

[4] Population estimates for 2015 have not yet been reported by the Census Bureau but, based on the continued pace of development approvals and housing unit permitting, the city's continuation of its rapid growth over the recent several years is highly likely.

Summary - Alternate Population Projections

Approach	2016	2020	2025	2030	2035	2040	2016 - 2040 Change		
							Increase	Percent	Avg/Year
ARC Adjusted	105,392	107,770	111,085	114,400	117,186	119,971	14,579	13.8%	0.58%
Parabolic Trend	105,294	111,630	118,733	124,927	130,211	134,586	29,292	27.8%	1.16%
Straignt Line Trend	105,666	113,186	122,595	132,013	141,441	150,879	45,213	42.8%	1.78%



The growth rate figures above the graph are particularly revealing. While the ARC regional forecast has Sandy Springs growing at a rate about only one-quarter of the rate experienced historically, a straight-on projection of the population growth since 2006 yields a 2040 population over 40% larger that the number of people living in the city today.

Recommendation

Comparison to the 'brackets' established by low and high scenarios in RCLCOs market demand study are particularly relevant. The calculated population forecasts for 2035 range from (rounded) 137,000 to 155,000 derived from the market study. For the same year as projected in this report, the figures are over 130,000 for the parabolic curve and 141,000 for the straight line trend. Thus, the 'higher' straight line trend projection is higher than but closer to the 'low' growth scenario posited by market demand. By 2040, the straight line trend projection approaches the 'aggressive growth' scenario responding to market demand, at 151,000 versus 155,000 under the 'high' scenario.

For the purposes of the impact fee study and update, the 'higher' forecast—labeled the 'straight line trend'—will be used for service area calculations and to quantify future demand for public facilities attributable to new growth and development.

The methodology followed in preparing the population forecasts is described below:

Historic Population Growth

On Table 2 the latest population estimates prepared by the Census Bureau as part of their Annual Estimates program are shown for each year between 2000 and 2014 for each city in Fulton County north of Atlanta, and Northern Fulton County as a whole. These particular figures are from the Intercensal Estimates for 2000-2009 (the Bureau revises its annual estimates for the preceding decade after a Decennial Census to correct individual errors) and from the Census Bureau's Annual Estimates Program for 2010 to 2014. (When the 2014 annual estimates were published, the 2010 estimate was slightly revised.)

It is important to note that Census Bureau estimates are made as of July 1 of each year, so they are slightly off from the Decennial Census figures for 2000 and 2010. Each Decennial Census is taken as of April 1. For instance, the population figure for '2007' on Table 1 would be as of July 1, 2007, covering the previous 12 months from June 30, 2006.

Data for all of the cities in the northern area of the county are shown in order to provide some context to historic trends and future projections for Sandy Springs, and for comparison to forecasts prepared by the Atlanta Regional Commission.

Also shown on Table 2 is each city's percentage of the total Northern Fulton County population each year.

As can be seen on the graphs below Table 2, Sandy Springs and Roswell have been in virtual lock step since 2000, both in terms of population growth and their respective percentages of the total northern county population. Unlike Roswell (and all of the other cities for that matter), Sandy Springs experienced an 'up-tick' in 2014.

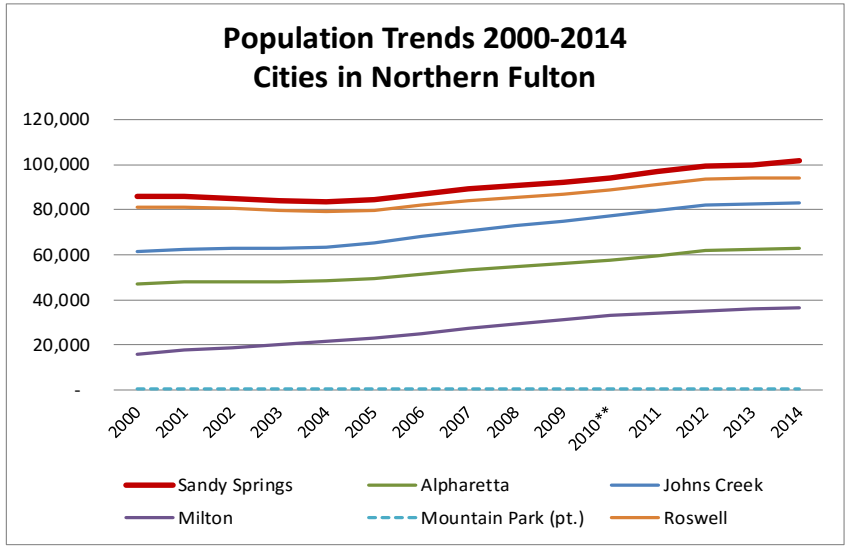
The graphs also reveal that the city of Milton maintained the highest growth rate throughout the 14-year period, increasing its percentage 'share' of Northern Fulton County from about 8% to over 13%. Population growth in Johns Creek and Sandy Springs basically maintained those cities share of the total at roughly 30% and 23% each. Comparatively slower growth in Roswell and Sandy Springs resulted in a drop in share of 5.5 and 4.8 percentage points respectively.

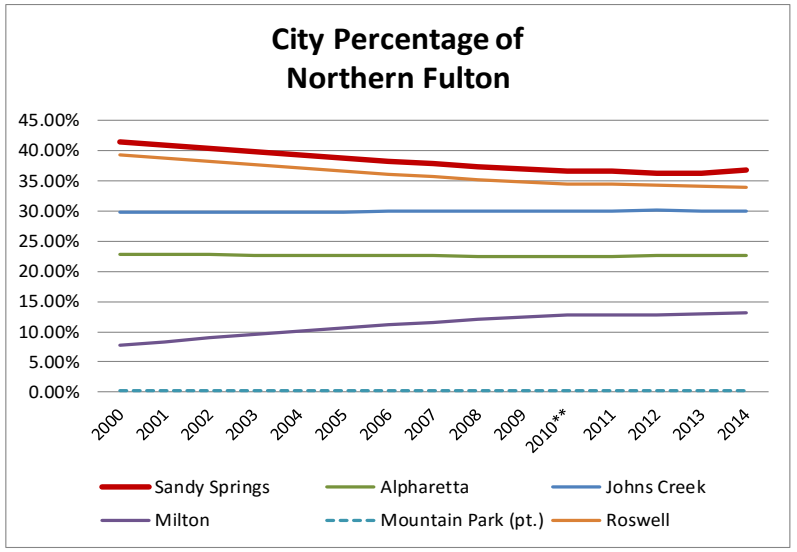
The figures on the next table, Table 3, provide further information on historic growth in the northern portion of the county. Looking at total population growth over the 14 year period (and ignoring tiny Mountain Park), Roswell had the lowest population increase of 15.6%, surpassed by Sandy Springs at 18.8%. When the more recent period is examined (beginning in the year of Sandy Springs' incorporation), the relative percentage 'rankings' among the cities remains the same, but the average annual increase for Sandy Springs notably increases.

Table 2: Census Estimates of Population 2000 - 2014

	Population Estimates*														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010**	2011	2012	2013	2014
Sandy Springs	**85,809**	**85,930**	**85,099**	**84,273**	**83,631**	**84,504**	**87,059**	**89,252**	**90,980**	**92,466**	**94,339**	**97,011**	**99,420**	**99,771**	**101,908**
Alpharetta	47,229	47,895	48,011	48,096	48,279	49,339	51,390	53,239	54,830	56,286	57,827	59,424	61,977	62,224	63,038
Johns Creek	61,522	62,566	62,891	63,163	63,562	65,116	67,978	70,580	72,844	74,929	77,200	79,521	82,296	82,745	83,102
Milton	16,035	17,592	18,913	20,170	21,432	23,064	25,183	27,246	29,210	31,119	32,910	33,917	35,016	35,900	36,662
Mountain Park (pt.)	518	514	505	497	489	490	502	510	516	521	529	542	556	556	557
Roswell	81,361	81,411	80,563	79,739	79,075	79,826	82,172	84,183	85,751	87,089	88,844	91,196	93,689	93,994	94,089
Total - Northern Fulton	206,665	209,978	210,883	211,665	212,837	217,835	227,225	235,758	243,151	249,944	257,310	264,600	273,534	275,419	277,448

	Percent of Northern Fulton														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010**	2011	2012	2013	2014
Sandy Springs	**41.52%**	**40.92%**	**40.35%**	**39.81%**	**39.29%**	**38.79%**	**38.31%**	**37.86%**	**37.42%**	**36.99%**	**36.66%**	**36.66%**	**36.35%**	**36.23%**	**36.73%**
Alpharetta	22.85%	22.81%	22.77%	22.72%	22.68%	22.65%	22.62%	22.58%	22.55%	22.52%	22.47%	22.46%	22.66%	22.59%	22.72%
Johns Creek	29.77%	29.80%	29.82%	29.84%	29.86%	29.89%	29.92%	29.94%	29.96%	29.98%	30.00%	30.05%	30.09%	30.04%	29.95%
Milton	7.76%	8.38%	8.97%	9.53%	10.07%	10.59%	11.08%	11.56%	12.01%	12.45%	12.79%	12.82%	12.80%	13.03%	13.21%
Mountain Park (pt.)	0.25%	0.24%	0.24%	0.23%	0.23%	0.22%	0.22%	0.22%	0.21%	0.21%	0.21%	0.20%	0.20%	0.20%	0.20%
Roswell	39.37%	38.77%	38.20%	37.67%	37.15%	36.65%	36.16%	35.71%	35.27%	34.84%	34.53%	34.47%	34.25%	34.13%	33.91%
Total - Northern Fulton	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%





* As of July 1 of each year. 2000 and 2010 differ from Census counts, which are as of April 1.

** Revised by Census Bureau in 2014.

Sources: Intercensal Estimates 2000-2009, US Bureau of the Census. Census Estimates Program, 2010-2014, US Bureau of the Census.

Table 3: Comparative Growth Rates - Northern Fulton Cities

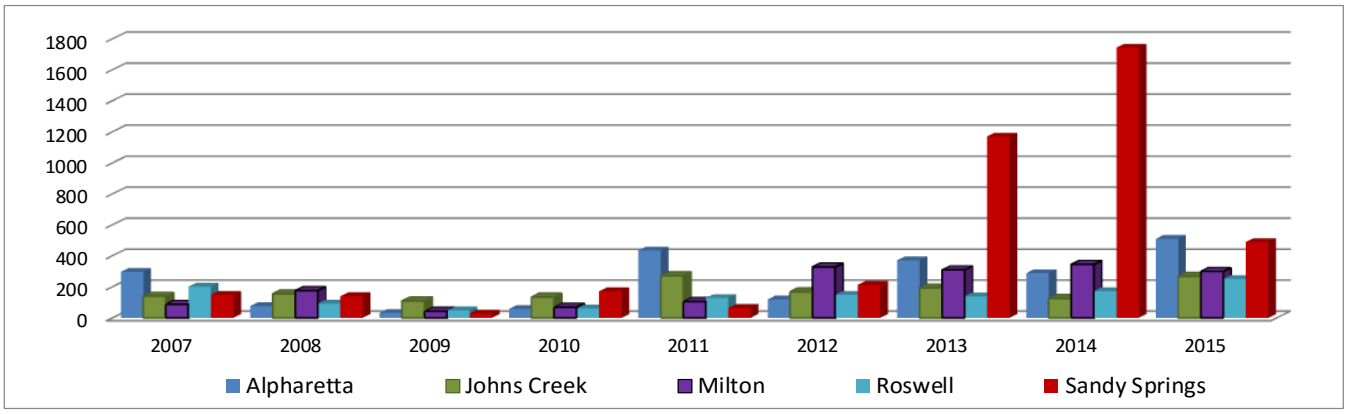
	Population			2000-2014 Increase			2006-2014 Increase		
	2000	2006	2014	Number	Percent	Avg/Year	Number	Percent	Avg/Year
Sandy Springs (Superdistrict)	**85,809**	**87,059**	**101,908**	**16,099**	**18.8%**	**1.3%**	**14,849**	**17.1%**	**2.1%**
Alpharetta	47,229	51,390	63,038	15,809	33.5%	2.4%	11,648	22.7%	2.8%
Johns Creek	61,522	67,978	83,102	21,580	35.1%	2.5%	15,124	22.2%	2.8%
Milton	16,035	25,183	36,662	20,627	128.6%	9.2%	11,479	45.6%	5.7%
Mountain Park (pt.)	518	502	557	39	7.5%	0.5%	55	11.0%	1.4%
North Fulton (Superdistrict)	**125,304**	**145,053**	**183,359**	**58,055**	**46.3%**	**3.3%**	**38,306**	**26.4%**	**3.3%**
Roswell (Superdistrict)	**81,361**	**82,172**	**94,089**	**12,728**	**15.6%**	**1.1%**	**11,917**	**14.5%**	**1.8%**
Total - Northern Fulton	206,665	227,225	277,448	70,783	34.3%	2.4%	50,223	22.1%	2.8%

Population figures for Sandy Springs, Milton and Johns Creek prior to incorporation estimated by US Bureau of the Census.

The quickening pace of population growth in Sandy Springs is also reflected in the number of building permits issued for residential units, beginning in 2007.

Table 4: Housing Units Permitted - 2007-2015

	North Fulton Cities								
	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Alpharetta	297	76	32	57	434	119	371	288	509
Johns Creek	139	154	109	134	271	168	192	125	267
Milton	87	175	43	68	105	328	309	344	299
Roswell	201	91	48	60	128	148	138	172	251
Sandy Springs	149	140	27	172	64	213	1,169	1,743	489



* Figures for 2015 are through November. Note: The number of permits issued in Mt. Park were insignificant and are not shown.
Source: US Census Bureau Building Permits Survey, based on data submitted by each city to the Bureau.

The vast majority of housing units issued building permits by all of the cities, except for Sandy

Springs, was for single-family residences (coupled with some low-rise multi-family units in Milton). The major increases in housing permits issued in the past few years in Sandy Springs, on the other hand, have included a large number of multi-family units. This reflects the unique position of the city in attracting mid-rise and high-rise multi-family developments to such 'hot' market areas as Perimeter Center, Roswell Road at Windsor Parkway, the new Downtown area, and the Roswell Road Corridor itself. Recent major rezoning approvals and development announcements in the city, along with post-recession financing opportunities and improving market conditions, suggest that this trend will continue for some time to come.

Building permits do not generate new population until the units have been built and occupied, and the build-out of a high-rise project can span several years. Although the Census Bureau has not yet released its estimates for 2015, the increase in permits issued over the past three years, along with further increases in development activity, are expected to maintain a relatively higher population growth rate than in years past.

Regional Forecasts

The Atlanta Regional Commission has prepared population forecasts to the year 2040 in relation to its preparation of *The Atlanta Region's Plan* (adopted this year). For statistical and transportation planning purposes, ARC does not publish its data on a city-by-city basis, but by 'superdistricts'. Northern Fulton County is covered by three Superdistricts: North Fulton (nominally encompassing Milton, Sandy Springs and John's Creek), Roswell, and Sandy Springs. The Sandy Springs Superdistrict most closely correlates to the city's incorporated area, while the other two only approximate actual city limit lines.

ARC's forecasts are shown under the Total Population heading on Table 5 for the four benchmark years that are reported by the Commission. In addition, the 2015-2040 numerical increase, the percentage increase and the average annual increase[5] have been calculated and are also shown on the table.

Table 5: Regional Forecasts 2015-2040

	Total Population				2015-2040 Increase		
	2015	2020	2030	2040	Number	Percent	Avg/Year
N Fulton Superdistrict	159,938	163,059	171,490	178,468	18,530	11.59%	0.46%
Roswell Superdistrict	107,316	109,088	112,254	113,966	6,650	6.20%	0.25%
Sandy Springs Superdistrict	97,995	100,774	106,974	112,183	14,188	14.48%	0.58%
Total - Northern Fulton	365,249	372,921	390,718	404,617	39,368	10.78%	0.43%

Source: Atlanta Regional Commission, Forecasts for *The Atlant Region's Plan* .

Notably, the average annual percentage increases reflected in the regional forecasts are well below the annual increases experienced by the cities that comprise Northern Fulton County between 2000 and 2014, and particularly since 2006, by a wide margin. Sandy Springs alone, which the Census

[5] For comparison purposes, the average annual increase is simply the total percent increase divided by the number of years.

Bureau estimates suggest has been growing at an average annual rate of more than 2% per year, is projected by ARC to grow at only 27% of that rate in the future.

In spite of this startling result, it is also notable that the 2015 population estimated by ARC for Sandy Springs was, according to the Census Bureau estimates, surpassed by the city sometime in late 2011.

To adjust for this discrepancy, the ARC forecast has been modified to account for a higher 'starting' population. To do this, the 'base year' population estimate for the city in 2016 is used to increase the ARC population numbers across the board.

The methodology and results are shown on Table 6. Since only benchmark years were reported by ARC, the intervening years were filled in on a straight-line incremental basis between benchmarks. For the 2016 base year, the ARC figure is lower by almost 7%. Thus, each following year is increased by that 'shortfall' percentage.

Table 6: Regional Forecast Adjustment

	Adjusted Trend Line	ARC Forecast	Adjustment Factor	Adjusted Forecast
2015		**97,995**	106.942%	104,798
2016	105,392	98,551	106.942%	105,392
2017		99,107	106.942%	105,987
2018		99,663	106.942%	106,582
2019		100,219	106.942%	107,176
2020		**100,774**	106.942%	107,770
2021		101,394	106.942%	108,433
2022		102,014	106.942%	109,096
2023		102,634	106.942%	109,759
2024		103,254	106.942%	110,422
2025		103,874	106.942%	111,085
2026		104,494	106.942%	111,748
2027		105,114	106.942%	112,411
2028		105,734	106.942%	113,074
2029		106,354	106.942%	113,737
2030		**106,974**	106.942%	114,400
2031		107,495	106.942%	114,957
2032		108,016	106.942%	115,514
2033		108,537	106.942%	116,072
2034		109,058	106.942%	116,629
2035		109,579	106.942%	117,186
2036		110,100	106.942%	117,743
2037		110,621	106.942%	118,300
2038		111,142	106.942%	118,857
2039		111,663	106.942%	119,415
2040		**112,183**	106.942%	119,971

Given the much higher average annual increase experienced in the past by Sandy Springs, and its superior position for attracting future high-density growth, the disconnect with the regional forecasts may well be exponential rather than merely a percentage shift. However, the role played by the regional forecast numbers is to establish a 'low estimate' out of a low-middle-high scenario of alternate projections.

Projecting Historic Trends into the Future

In order to get a better 'handle' on population projections for Sandy Springs, the population figures from the Census Bureau (from Table 2) are projected to the year 2040 using two applications of regression analysis (often called 'trend analysis' and referred to by mathematicians as using the 'least squares' method).

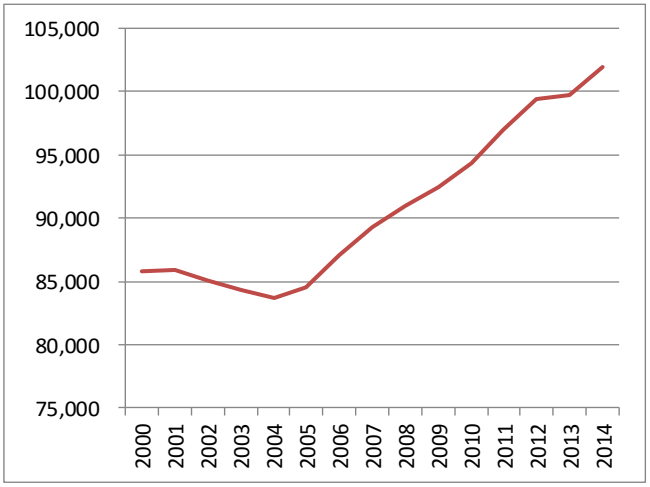
In each application, 1st, 2nd and 3rd order regressions were calculated, which (in order) assume a straight line relationship among the data, a relationship that produces a parabolic curve, and an 'ess' curve function. The point is to find the function that 'best fits' the data. This is represented by the correlation between the actual data and the data points calculated by the regression. Positive correlations range from 0.0, which reflects absolutely no relationship at all, to 1.0, which is a perfect fit.

- The first set of regressions was calculated against the annual population estimates for 2000 to 2014.
- The second set of regressions was calculated against the annual population estimates for the more recent period of 2006-2014.

Obviously, when fitting curves to data points, the inherent 'curve' in the data has a dramatic effect on the results, particularly since the regression is extended forward as a projection for many more years than the range of years covered by the data.

Table 7: Sandy Springs Population since 2000

Sandy Springs Population	
2000	85,809
2001	85,930
2002	85,099
2003	84,273
2004	83,631
2005	84,504
2006	87,059
2007	89,252
2008	90,980
2009	92,466
2010	94,339
2011	97,011
2012	99,420
2013	99,771
2014	101,908



The graph of Sandy Springs' population reflects a decided shape, which shows a loss in population beginning to dip in 2001 and recovering in 2004, followed by relatively steady growth (with a bit of a slowing during the recession years) until about 2012, a strange plateau to 2013, and the resumption of growth after that.

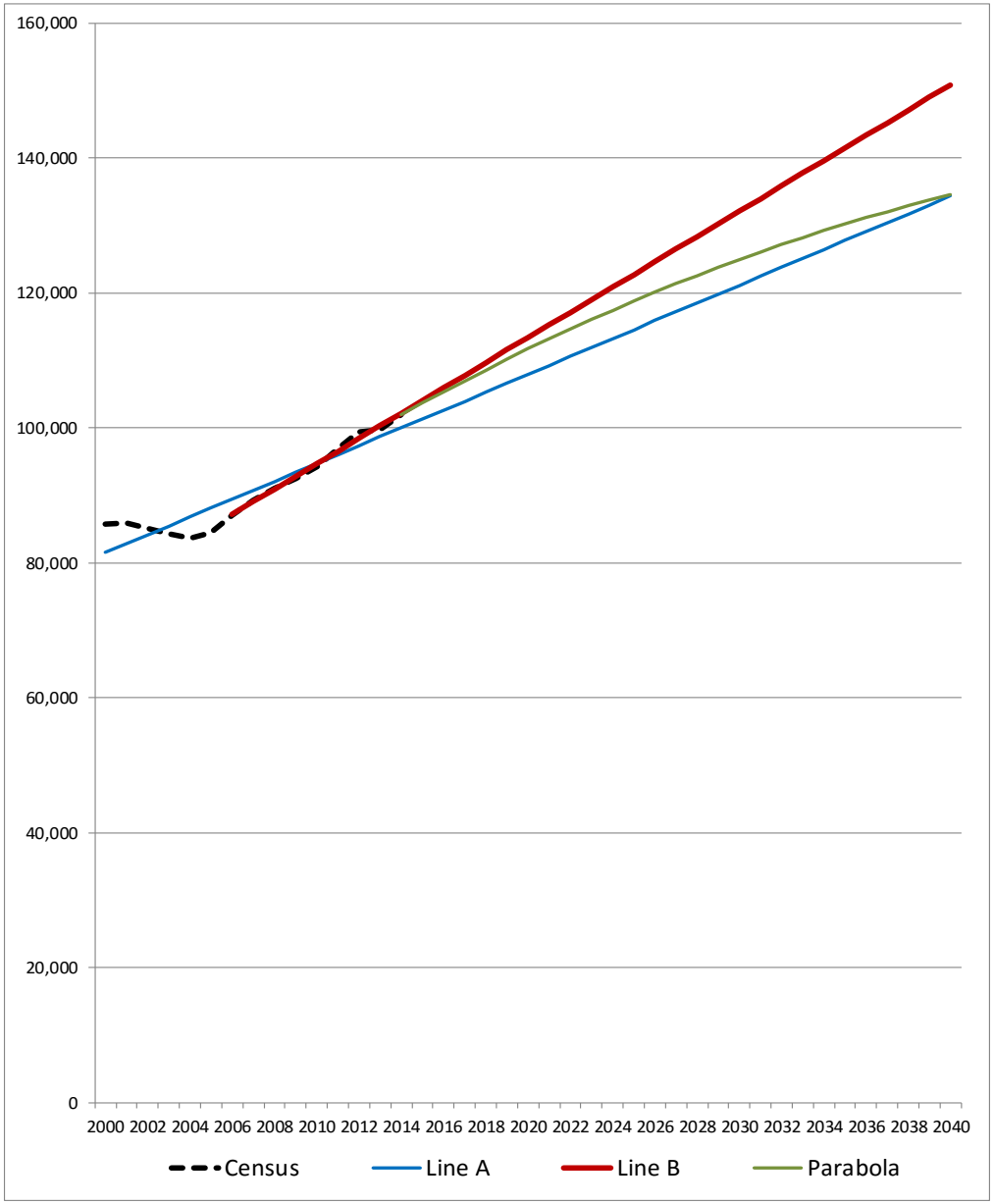
For both data sets examined (2000-2014 and 2006-2014), the curve inherent in the data points causes 'ess' curve regressions to initially increase and then decrease, resulting in in a zero population in future years. The correlations for the two 'ess' curves are high, since they fit the historic data very well, but obviously project an impossible future. A straight line regression against the 2006-2014 data stream, however, projects a much brighter future and is consistent with the demand projected in the Market Report.

Both sets of the full population regressions for the two time periods are included as an exhibit to this appendix. Bearing in mind the application of common sense, development trends and market/economic opportunities, three of the 'most likely' trend lines are shown on Table 8.

The first, Line A, is the straight line projection based on the 2000-2014 data. Its correlation is relatively low (remembering the inherent curve in the data points), but is included here because of the fact that its 2040 projected population is almost the same as that projected by the parabolic curve based on the 2006-2014 data (around 134,500). A straight line projection of the 2006-2014 data (Line B) results in a much higher projected population (almost 151,000), which lies a little over mid-way between the Market Report's 'low' and 'high' population forecasts of market demand.

Table 8: Population Trend Analysis - Sandy Springs

	Census	2000-14 Base	2006-2014 Base	
		Line A	Line B	Parabola
2000	85,809	81,507		
2001	85,930	82,829		
2002	85,099	84,152		
2003	84,273	85,474		
2004	83,631	86,796		
2005	84,504	88,119		
2006	87,059	89,441	87,198	
2007	89,252	90,763	89,071	
2008	90,980	92,086	90,944	
2009	92,466	93,408	92,817	
2010	94,339	94,731	94,690	
2011	97,011	96,053	96,563	
2012	99,420	97,375	98,435	
2013	99,771	98,698	100,308	
2014	101,908	100,020	102,181	102,011
2015		101,342	104,054	103,720
2016		102,665	105,927	105,392
2017		103,987	107,800	107,028
2018		105,310	109,673	108,628
2019		106,632	111,546	110,191
2020		107,954	113,419	111,717
2021		109,277	115,292	113,207
2022		110,599	117,165	114,660
2023		111,921	119,038	116,077
2024		113,244	120,911	117,458
2025		114,566	122,784	118,802
2026		115,889	124,657	120,110
2027		117,211	126,530	121,381
2028		118,533	128,403	122,615
2029		119,856	130,276	123,814
2030		121,178	132,149	124,975
2031		122,500	134,022	126,100
2032		123,823	135,895	127,189
2033		125,145	137,768	128,241
2034		126,468	139,641	129,257
2035		127,790	141,514	130,237
2036		129,112	143,387	131,179
2037		130,435	145,260	132,086
2038		131,757	147,133	132,956
2039		133,079	149,006	133,789
2040		134,402	150,879	134,586
	Correlation:	0.8693	0.9914	0.9918



Because regressions convert the actual data points to their individual points along their 'best fit' curves (which, by definition, are averages calculated amongst the actual data), none of the regressions agree exactly with the 2014 Census population figure. The data streams are therefore adjusted to the 2014 population to create continuous lines of progression between 2014 and 2040.

These adjustments are shown on Table 9. Because of their very high correlations to the data, only the parabolic curve and the straight line B are adjusted; Line A is redundant as to its projected 2040 population, and has a much lower correlation.

The adjustment process is mathematically simple. For each regression, the percentage that the 2014 Census estimate is different from the regression's 2014 figure is first calculated. This percentage is then incrementally increased until it reaches the regressions projected 2040 population. The 'difference' percentages are applied to each year's regression data point to produce the adjusted figure for each year. Since ultimately the point is to arrive at the 2040 population projected by the regression, the adjustment percentage for 2040 would be 100% (i.e., the adjusted population figure would be the same as the regression's projected number). Between 2014 and 2040, each year's adjustment percentage is incrementally increased until it reaches 100% in 2040.

Table 9: Sandy Springs Population Trend Forecast Adjustments

	Census	Parabola			Line B		
		Trend Line Projection	Adjustment Factor	Adjusted Forecast	Trend Line Projection	Adjustment Factor	Adjusted Forecast
2014	101,908	102,011	99.899%	101,908	102,181	99.732%	101,908
2015		103,720	99.903%	103,619	104,054	99.743%	103,787
2016		105,392	99.907%	105,294	105,927	99.753%	105,666
2017		107,028	99.911%	106,932	107,800	99.763%	107,545
2018		108,628	99.914%	108,535	109,673	99.774%	109,425
2019		110,191	99.918%	110,101	111,546	99.784%	111,305
2020		111,717	99.922%	111,630	113,419	99.794%	113,186
2021		113,207	99.926%	113,123	115,292	99.804%	115,067
2022		114,660	99.930%	114,580	117,165	99.815%	116,948
2023		116,077	99.934%	116,001	119,038	99.825%	118,830
2024		117,458	99.938%	117,385	120,911	99.835%	120,712
2025		118,802	99.942%	118,733	122,784	99.846%	122,595
2026		120,110	99.946%	120,044	124,657	99.856%	124,477
2027		121,381	99.949%	121,319	126,530	99.866%	126,361
2028		122,615	99.953%	122,558	128,403	99.876%	128,244
2029		123,814	99.957%	123,761	130,276	99.887%	130,128
2030		124,975	99.961%	124,927	132,149	99.897%	132,013
2031		126,100	99.965%	126,056	134,022	99.907%	133,898
2032		127,189	99.969%	127,150	135,895	99.918%	135,783
2033		128,241	99.973%	128,206	137,768	99.928%	137,669
2034		129,257	99.977%	129,227	139,641	99.938%	139,555
2035		130,237	99.981%	130,211	141,514	99.949%	141,441
2036		131,179	99.984%	131,159	143,387	99.959%	143,328
2037		132,086	99.988%	132,070	145,260	99.969%	145,215
2038		132,956	99.992%	132,945	147,133	99.979%	147,102
2039		133,789	99.996%	133,784	149,006	99.990%	148,990
2040		134,586	100.000%	134,586	150,879	100.000%	150,879

Summary of Population Forecasts

The regional forecast prepared by ARC, as adjusted in a preceding section, and the two trend analysis forecasts as adjusted above, are brought together on Table 10.

The Regional Forecast

The regional forecast, even as adjusted to the higher 'base' year, appears to be seriously unrealistic. The line extends at a sudden angle to the population estimates published by the Census Bureau, creating a notable 'break' in continuity to historic trends. To be considered realistic, growth and development in Sandy Springs would have to slump immediately to only a quarter of its current pace, when the opposite is the case given building permitting, development and recent project announcements.

The Straight Line Trend

At the upper end, the 'straight line trend' seems achievable, on the one hand, given its overall continuity with past trends, its comparison to future market demand, and, especially, the major increase in development activity and housing unit permitting that the city is currently experiencing. To achieve the projected population in 2040, however, the city would have to add over 40% the number of people that live there now—a daunting prospect awaiting only development and construction activity to respond to the high level of market demand that living in Sandy Springs presents. We consider this the 'higher', but not unrealistic, projection. The overall growth rate to 2040 works out to 1.8%, compared to the 2006-2014 rate of 2.1% per year. On the other hand, developable land resources, whether vacant property, redevelopment opportunities that become economically feasible, or densification of currently developed land, may put the 'squeeze' on the ultimate pace of growth over the coming 24 years. In other words, the projected increase in growth may not be sustainable in the long run, but this 'straight line trend' projection still falls short of the 'aggressive growth' scenario posited by the market demand study by more than 13,000 in 2035, and does not meet the projected 2035 demand even by 2040.

The Parabolic Curve

The 'medium' forecast—the parabolic curve—would be the most realistic only if market demand is severely thwarted. The downward slope of the curve suggests a gradual slowing of development activity, possibly the result of dwindling land resources and increasing infrastructure limitations (such as road capacity) created by future growth. In the broad view, this forecast reflects an average annual rate of growth of 1.2%, which compares favorably with the 1.3% experienced over the longer historic period of 2000-2014 (but much lower than the rebounding rate after 2006), and results in a total population increase of 27% over 2014. On the one hand, we are impressed that the parabolic curve has a correlation statistically indistinguishable from the 'straight line trend' regression, but, on the other hand, the 2035 population forecast by the parabolic curve is almost 7,000 people less than the lowest population (the 'baseline' forecast) suggested by the market demand study.

Table 10: Alternate Population Forecasts

	Census	ARC Adjusted	Parabolic Trend Line	Straight Trend Line
2006	87,059			
2007	89,252			
2008	90,980			
2009	92,466			
2010	94,339			
2011	97,011			
2012	99,420			
2013	99,771			
2014	101,908		101,908	101,908
2015		104,798	103,619	103,787
2016		105,392	105,294	105,666
2017		105,987	106,932	107,545
2018		106,582	108,535	109,425
2019		107,176	110,101	111,305
2020		107,770	111,630	113,186
2021		108,433	113,123	115,067
2022		109,096	114,580	116,948
2023		109,759	116,001	118,830
2024		110,422	117,385	120,712
2025		111,085	118,733	122,595
2026		111,748	120,044	124,477
2027		112,411	121,319	126,361
2028		113,074	122,558	128,244
2029		113,737	123,761	130,128
2030		114,400	124,927	132,013
2031		114,957	126,056	133,898
2032		115,514	127,150	135,783
2033		116,072	128,206	137,669
2034		116,629	129,227	139,555
2035		117,186	130,211	141,441
2036		117,743	131,159	143,328
2037		118,300	132,070	145,215
2038		118,857	132,945	147,102
2039		119,415	133,784	148,990
2040		119,971	134,586	150,879

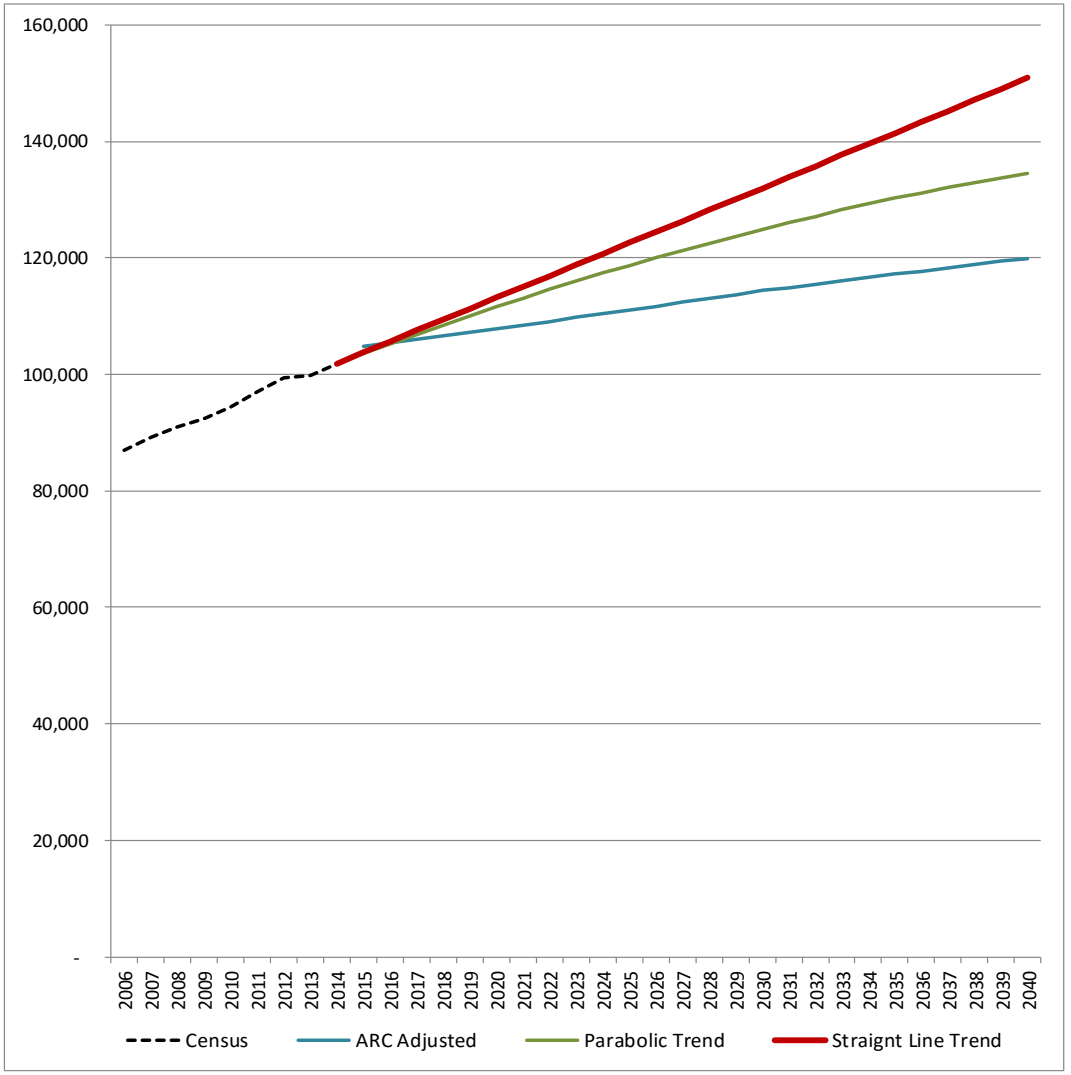


Figure 1: Regressions against 2000-2014 Data

	Census	Line A	Parabola	Ess Curve
2000	85,809	81,507		
2001	85,930	82,829		
2002	85,099	84,152		
2003	84,273	85,474		
2004	83,631	86,796		
2005	84,504	88,119		
2006	87,059	89,441		
2007	89,252	90,763		
2008	90,980	92,086		
2009	92,466	93,408		
2010	94,339	94,731		
2011	97,011	96,053		
2012	99,420	97,375		
2013	99,771	98,698		
2014	101,908	100,020	103,482	101,779
2015		101,342	106,516	102,699
2016		102,665	109,778	103,099
2017		103,987	113,269	102,885
2018		105,310	116,987	101,963
2019		106,632	120,934	100,241
2020		107,954	125,110	97,625
2021		109,277	129,513	94,020
2022		110,599	134,145	89,334
2023		111,921	139,005	83,473
2024		113,244	144,093	76,344
2025		114,566	149,410	67,852
2026		115,889	154,954	57,905
2027		117,211	160,727	46,408
2028		118,533	166,728	33,269
2029		119,856	172,958	18,393
2030		121,178	179,415	1,687
2031		122,500	186,101	
2032		123,823	193,015	
2033		125,145	200,157	
2034		126,468	207,528	
2035		127,790	215,127	
2036		129,112	222,954	
2037		130,435	231,009	
2038		131,757	239,292	
2039		133,079	247,804	
2040		134,402	256,544	
	Correlation:	0.8693	0.9647	0.9895

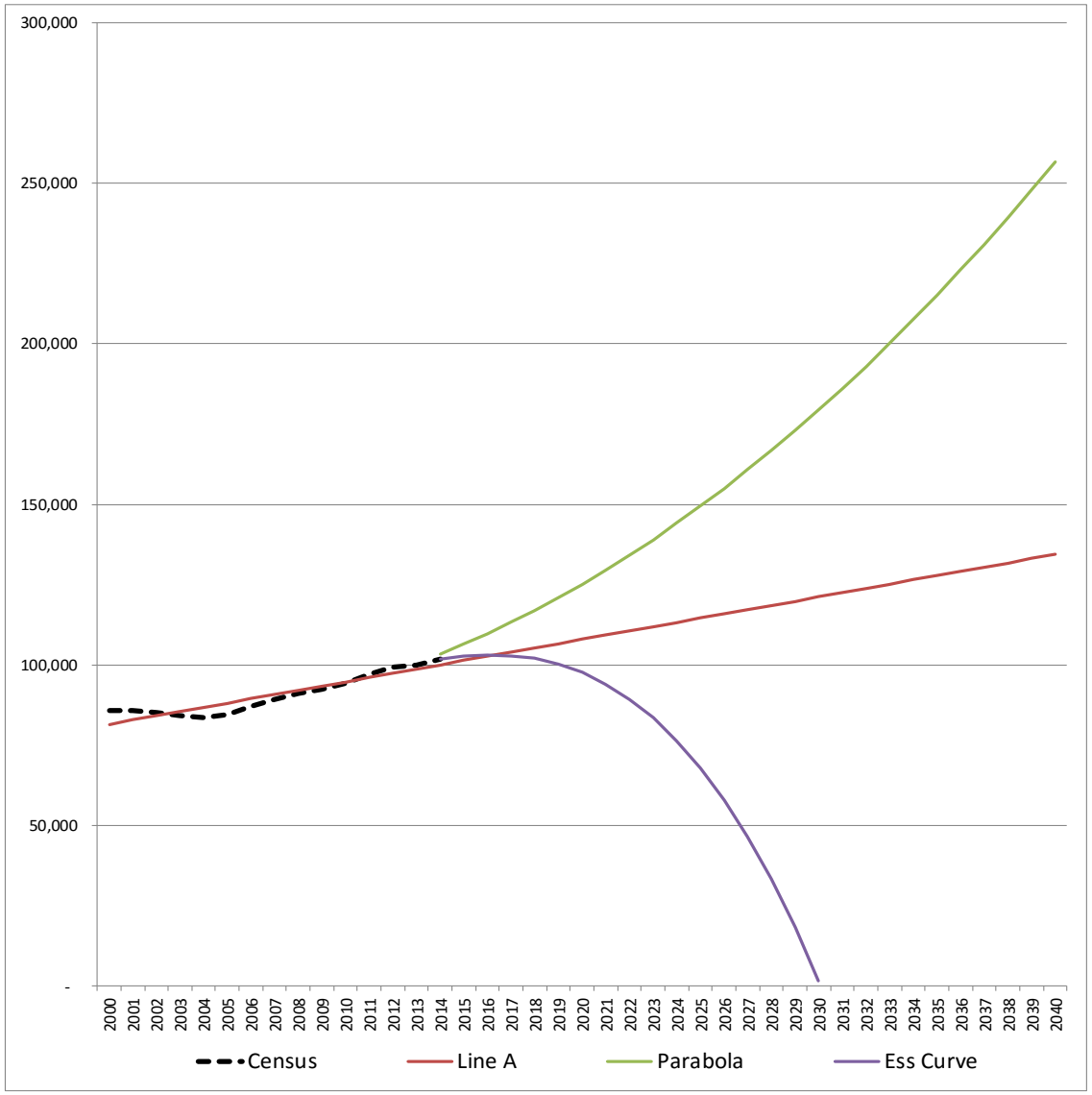
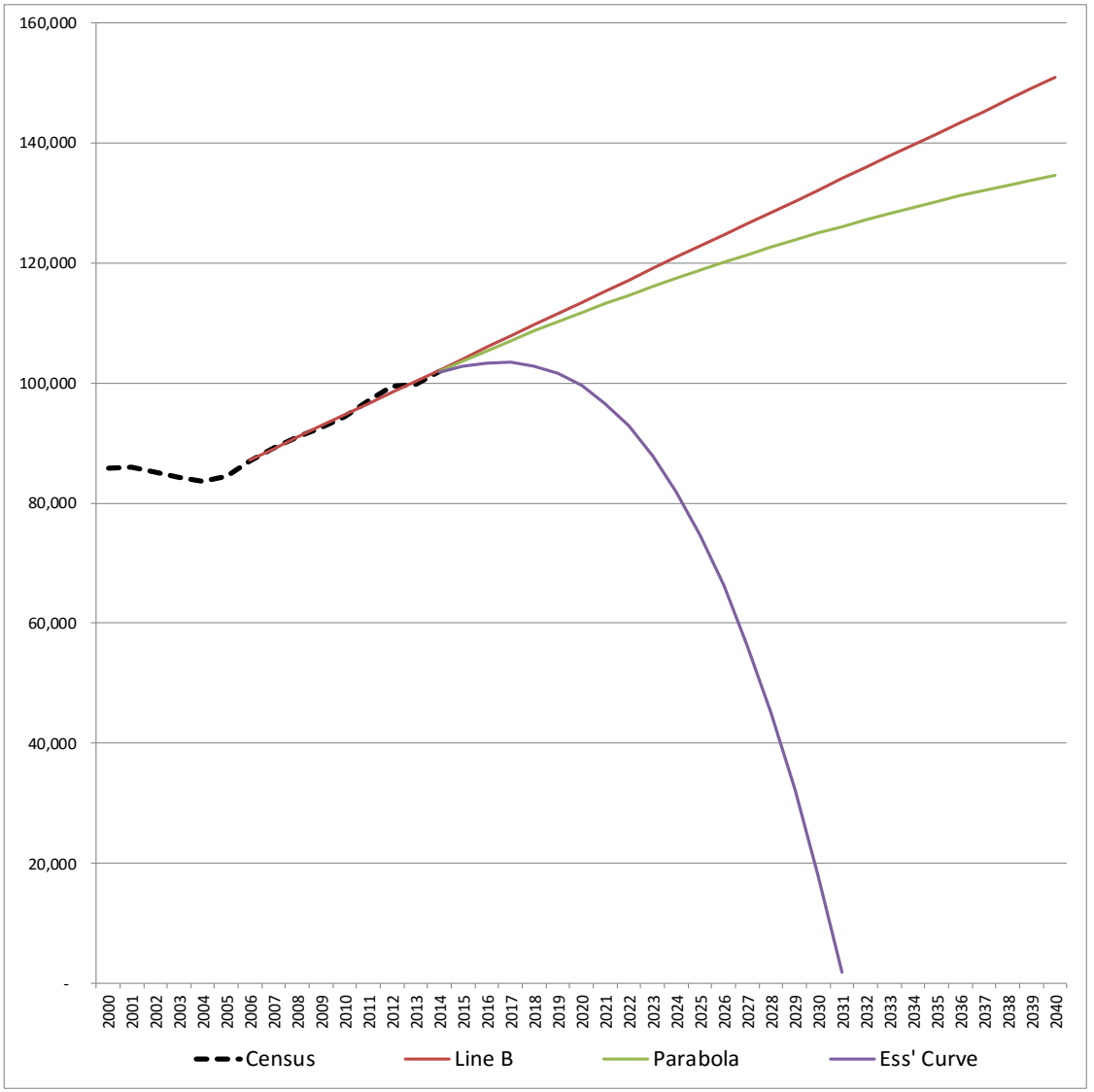


Figure 2: Regressions against 2006-2014 Data

	Census	Line B	Parabola	Ess' Curve
2000	85,809			
2001	85,930			
2002	85,099			
2003	84,273			
2004	83,631			
2005	84,504			
2006	87,059	87,198		
2007	89,252	89,071		
2008	90,980	90,944		
2009	92,466	92,817		
2010	94,339	94,690		
2011	97,011	96,563		
2012	99,420	98,435		
2013	99,771	100,308		
2014	101,908	102,181	102,011	101,780
2015		104,054	103,720	102,810
2016		105,927	105,392	103,391
2017		107,800	107,028	103,440
2018		109,673	108,628	102,873
2019		111,546	110,191	101,608
2020		113,419	111,717	99,562
2021		115,292	113,207	96,653
2022		117,165	114,660	92,798
2023		119,038	116,077	87,914
2024		120,911	117,458	81,919
2025		122,784	118,802	74,730
2026		124,657	120,110	66,264
2027		126,530	121,381	56,439
2028		128,403	122,615	45,171
2029		130,276	123,814	32,378
2030		132,149	124,975	17,978
2031		134,022	126,100	1,888
2032		135,895	127,189	
2033		137,768	128,241	
2034		139,641	129,257	
2035		141,514	130,237	
2036		143,387	131,179	
2037		145,260	132,086	
2038		147,133	132,956	
2039		149,006	133,789	
2040		150,879	134,586	
	Correlation:	0.9914	0.9918	0.9931



Housing Forecasts

Based on the population forecast recommended in the previous section for the impact fee calculations (the adjusted 'straight line trend' forecast), estimates have been made of the future number of households and housing units in the city to 2040. Note that for recreation facilities and park lands, the Level of Service standards will be based on the number of housing units in the city. In contrast, public safety facilities (Fire Protection and Police Services) will combine population and employment into a 'day-night' population to reflect their 24-hour service demand. (Road improvement fees, of course, are based on traffic demand calculations resulting from housing unit and employment growth).

Households

The table on the next page shows how the housing projections were calculated. The approach is to calculate the number of households (which equates to the number of occupied housing units) and then to expand that to the total number of housing units by adding in vacant units.

The 2010 Census reported that, at that time, there were 327 people living in 'group quarters'. These are not housing units. People living in group quarters may have their own rooms, but meals are served from a central kitchen (such as in a detention facility) or in a community dining room (such as an assisted care facility or retirement home). The 327 people amounted to 0.3484% of the total population, leaving 99.6516% of the population living in households in 2010. For future years (2015-2040), this percentage is assumed to be constant and is applied to each year's total projected population to estimate the household population.

To arrive at the number of households in the city each year, the household population figure is divided by the average household size. The only data available regarding the average household size in Sandy Springs, however, is drawn from the 2010 Census. At that time, the average calculated out to be 2.2092 people per household per the Census. The only reliable resource that makes household size forecasts is the countywide projections prepared by Woods & Poole Economics. Their forecasts for Fulton County are shown on the table, as well as the countywide average household size for 2010.

Our assumption is that the average population-per-household sizes in Sandy Springs will 'track' proportionally the countywide trend projected by Woods & Poole. In 2010, the average population-per-household size in Sandy Springs was almost 2.21 people, compared to the countywide figure of 2.54. The Sandy Springs 2010 figure is a hair over 86.9989% of the countywide figure; this percentage is applied to the countywide averages through 2040 to arrive at future average population-per-household sizes for Sandy Springs. These average household sizes are then divided into the Sandy Springs projected population in households every year to arrive at the household forecasts.

Housing Units

To arrive at the total housing unit estimates each year, including vacant units, the number of households (i.e., occupied housing units) is divided by the applicable occupancy rate. The housing occupancy rate for Sandy Springs in 2010 is calculated by dividing the total number of households by the total number of housing units reported by the Census, which resulted in an occupancy rate of almost 90.16%. For want of any historic or more recent data, this occupancy rate is applied each year to the projected number of households to estimate the number of housing units, both occupied and vacant.

Table 11: Housing Unit Forecast: 2015-2040

	Total Population	Population in Households	Avg HH Size - Woods & Poole	Avg HH Size - Sandy Springs	Total Households	Occupancy Rate	Total Housing Units
2010	93,853	93,526	2.54	2.2092	42,334	90.1587%	46,955
2015	103,787	103,425	2.40	2.0842	49,624	90.1587%	55,041
2016	105,666	105,298	2.39	2.0772	50,693	90.1587%	56,226
2017	107,545	107,170	2.38	2.0711	51,744	90.1587%	57,392
2018	109,425	109,044	2.38	2.0663	52,772	90.1587%	58,532
2019	111,305	110,917	2.37	2.0620	53,791	90.1587%	59,663
2020	113,186	112,792	2.37	2.0579	54,809	90.1587%	60,792
2021	115,067	114,666	2.36	2.0541	55,824	90.1587%	61,918
2022	116,948	116,541	2.36	2.0526	56,776	90.1587%	62,973
2023	118,830	118,416	2.36	2.0523	57,699	90.1587%	63,997
2024	120,712	120,291	2.36	2.0526	58,603	90.1587%	65,000
2025	122,595	122,168	2.36	2.0534	59,494	90.1587%	65,988
2026	124,477	124,043	2.36	2.0546	60,373	90.1587%	66,963
2027	126,361	125,921	2.36	2.0560	61,246	90.1587%	67,931
2028	128,244	127,797	2.37	2.0576	62,108	90.1587%	68,887
2029	130,128	129,675	2.37	2.0599	62,952	90.1587%	69,824
2030	132,013	131,553	2.37	2.0627	63,776	90.1587%	70,738
2031	133,898	133,431	2.37	2.0657	64,594	90.1587%	71,645
2032	135,783	135,310	2.38	2.0689	65,402	90.1587%	72,541
2033	137,669	137,189	2.38	2.0723	66,202	90.1587%	73,428
2034	139,555	139,069	2.39	2.0753	67,010	90.1587%	74,325
2035	141,441	140,948	2.39	2.0779	67,831	90.1587%	75,235
2036	143,328	142,829	2.39	2.0796	68,682	90.1587%	76,179
2037	145,215	144,709	2.39	2.0802	69,564	90.1587%	77,157
2038	147,102	146,589	2.39	2.0801	70,473	90.1587%	78,166
2039	148,990	148,471	2.39	2.0792	71,409	90.1587%	79,204
2040	150,879	150,353	2.39	2.0774	72,375	90.1587%	80,275

Sources: 2010 City data - 2010 Decennial Census, US Bureau of the Census.
2015-2040 City Population - straight line trend forecast, ROSS+associates.
Fulton County projections by Woods & Poole Economics, Inc., *2015 State Profile: Georgia* .

Employment Forecasts

The Atlanta Regional Commission, as part of its newest regional plan for its 10-County area, has produced employment forecasts from 2015 to 2040. As noted above in the Population Forecasts section, for statistical and transportation planning purposes ARC does not publish its data on a city-by-city basis, but by 'superdistricts'. Northern Fulton County is covered by three Superdistricts: North Fulton (nominally encompassing Milton, Sandy Springs and John's Creek), Roswell, and Sandy Springs. The Sandy Springs Superdistrict most closely correlates to the city's incorporated area, while the other two only approximate actual city limit lines.

Regional Forecasts for Northern Fulton Superdistricts

ARC's forecasts are shown under the Total Employment heading on Table 12 for the four benchmark years that are reported by the Commission. In addition, the 2015-2040 numerical increase and the percentage increase are also shown on the table.

Table 12: ARC Employment Forecasts - Benchmark Years

Total Employment	2015	2020	2030	2040	2015-2040 Increase	
					Number	Percent
N. Fulton Superdistrict	122,135	132,849	142,578	151,191	29,056	19.2%
Roswell Superdistrict	48,555	53,376	59,268	64,695	16,140	24.9%
Sandy Springs Superdistrict	**122,795**	**133,858**	**145,305**	**157,030**	**34,235**	**21.8%**
Northern Fulton County	293,485	320,083	347,151	372,916	79,431	21.3%

Value-Added Jobs	2015	2020	2030	2040	2015-2040 Increase	
					Number	Percent
N. Fulton Superdistrict	119,359	129,265	138,750	146,983	27,624	18.8%
Roswell Superdistrict	47,361	51,809	57,577	62,808	15,447	24.6%
Sandy Springs Superdistrict	**120,306**	**130,652**	**141,891**	**153,307**	**33,001**	**21.5%**
Northern Fulton County	287,026	311,726	338,218	363,098	76,072	21.0%

Source: Atlanta Regional Commission, Draft Forecasts, *The Atlant Region's Plan* .

The second portion of Table 12 shows the 'value-added' jobs figures for the benchmark years, based on ARC's breakdowns of employment by 'industry' for each superdistrict. There are several types of jobs that would not be associated with an impact fee (such as agricultural workers and itinerant construction workers). Subtracting these jobs from the total employment figures results in a 'net' number of jobs, called the 'value-added' jobs for the purpose of this analysis.

The ARC forecasts indicate that Sandy Springs will experience the largest number of new employees compared to the other two superdistricts in Northern Fulton County. The Roswell Superdistrict, although having the smallest number of new employees, is forecast by ARC to experience the largest percentage of growth, while the N. Fulton Superdistrict (nominally Sandy Springs, Milton and

John's Creek) are closer to Sandy Springs numerically but have the lowest percentage increase. ARC's view of the relative strength of the Perimeter Center market and other growth centers in Sandy Springs is evident in the forecasts, compared to other parts of the Northern Fulton area.

Detailed ARC Forecasts for Sandy Springs

ARC's employment forecasts by industry type for Sandy Springs are shown on Table 13. The preponderance of office-type categories—information, finance, real estate, professional services, administrative, and health care—is notable and consistent with the findings and projections of RCLCO's Market Report.

Table 13: ARC Employment Forecasts - Sandy Springs

Industry	2015	2020	2030	2040
Agriculture, Forestry, Fishing & Hunting	31	32	32	10
Mining, Quarrying, and Oil & Gas Extraction	28	32	37	41
Utilities	403	414	373	327
Construction	2,430	3,142	3,345	3,672
Manufacturing	1,234	1,268	1,265	1,267
Wholesale Trade	7,916	8,566	9,068	9,393
Retail Trade	5,814	6,296	6,844	7,173
Transportation & Warehousing	2,157	2,250	2,193	2,161
Information	8,303	8,522	8,613	8,704
Finance & Insurance	16,317	17,467	18,212	18,692
Real Estate and Rental & Leasing	10,312	11,267	12,431	13,376
Professional, Scientific, & Technical Services	14,300	15,365	16,781	18,894
Management of Companies & Enterprizes	2,560	3,240	3,384	3,525
Administrative & Support, Waste Management	9,843	10,592	11,518	12,786
Educational Services	4,312	4,956	6,403	7,017
Health Care & Social Assistance	22,310	24,780	27,898	32,291
Arts, Entertainment, and Recreation	1,592	1,699	1,651	1,623
Accommodations & Food Services	7,513	8,291	8,874	9,227
Other Services (except Public Administration)	2,552	2,557	2,700	2,826
Public Administration	2,868	3,122	3,683	4,025
Total Employment	122,795	133,858	145,305	157,030
Value-Added Jobs	120,306	130,652	141,891	153,307

Source: Atlanta Regional Commission, Draft Forecasts, *The Atlant Region's Plan* .
Value-Added Jobs exclude agriculture, mining and construction.

'Value-added' jobs, as discussed above, are also shown on Table 13 and the industry categories excluded from the total figures are noted.

Employment Forecasts to Meet Future Market Demand

As detailed as the ARC forecasts are, they fall well short of the market demand projected for Sandy Springs (shown on Table 1). This is rectified through a process illustrated on Table 14 (on the next page) and described below.

ARC's employment forecasts for Sandy Springs are shown for each of their benchmark years in the 'Benchmark' column of Table 14. In the next column, employment for each of the intervening years between each of ARC's benchmark figures is calculated on a straight-line basis.[6] These 'interpolated' employment figures are graphed on the chart accompanying the table.

Under ARC's scenario, there appears to be a growth spurt to 2020, after which the forecast takes a sharp 'turn' to a much lower growth rate.

ARC's forecast is 'adjusted' to the Market Report's demand projections in the 'Adjusted to Market' column. While the Market Report's 2015 employment figure is used as the base, the future 2035 figure (164,443) represents the mid-point between the Market Report's 'baseline' and 'aggressive growth' scenarios (the 'low' and the 'high' projections). The intervening years are calculated using an average annual increase formula assuming the forecasts reflect a curvilinear result, as in fact they do. The employment totals are then extended to 2040 (to be consistent with the ARC time frame) using the same average annual increase formula.

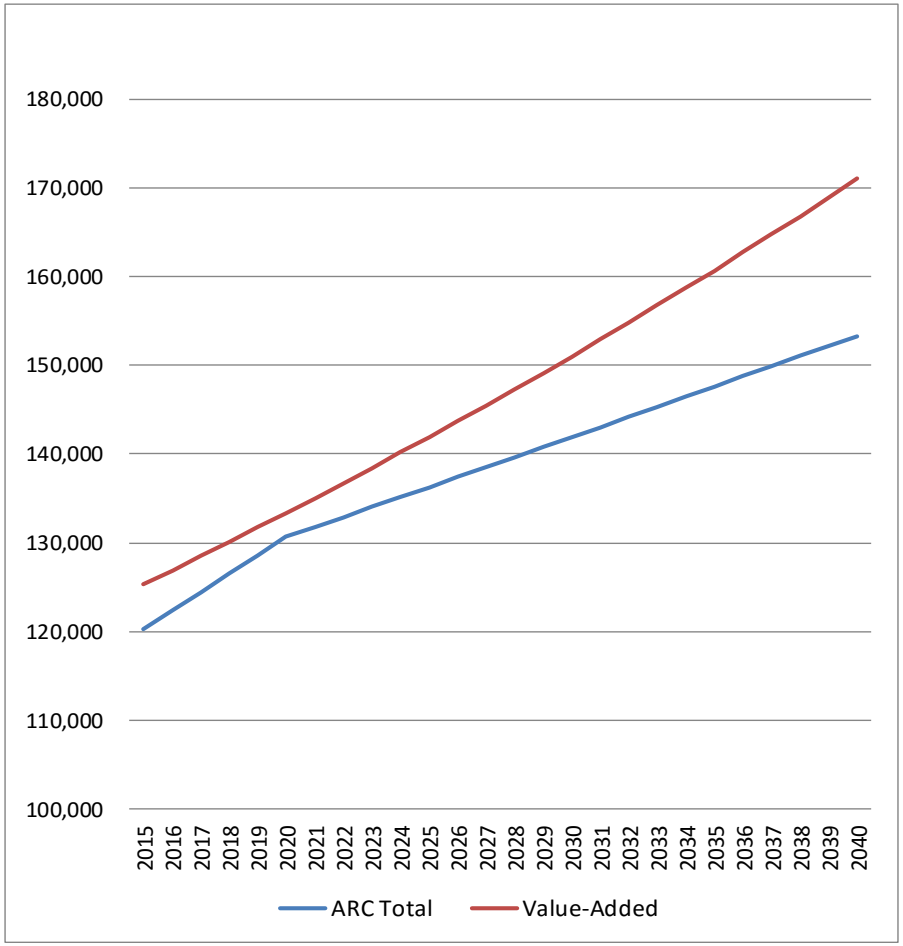
Lastly, the 'market demand' figures are reduced to 'value-added' job figures by excluding the proportion of the total that is projected to be in the agriculture, mining and construction industry categories each year. This is accomplished by using the average of the proportions for such jobs projected by ARC in their detailed employment calculations by industry for each benchmark year.

The 'value-added' jobs figures are used in the impact fee calculations of future growth demand, and shown on the Summary tables on page 1.

[6] Although some 'curvature' could be supposed in the early years, the 2020-2040 forecast numbers demonstrate a notably straight line.

Table 14: Annualized Employment Forecast - Sandy Springs

	Benchmark	Interpolated	Adjusted to Market	Adjusted to Value-Added
2015	**120,306**	**120,306**	**128,276**	125,344
2016		122,375	129,879	126,910
2017		124,444	131,502	128,496
2018		126,513	133,145	130,102
2019		128,582	134,809	131,728
2020	**130,652**	**130,652**	136,494	133,374
2021		131,776	138,200	135,041
2022		132,900	139,927	136,729
2023		134,024	141,676	138,438
2024		135,148	143,446	140,167
2025		136,272	145,239	141,919
2026		137,396	147,054	143,693
2027		138,520	148,892	145,489
2028		139,644	150,753	147,307
2029		140,768	152,637	149,148
2030	**141,891**	**141,891**	154,544	151,012
2031		143,033	156,475	152,899
2032		144,175	158,430	154,809
2033		145,317	160,410	156,744
2034		146,459	162,415	158,703
2035		147,601	**164,443**	160,684
2036		148,743	166,498	162,692
2037		149,885	168,579	164,726
2038		151,027	170,686	166,785
2039		152,169	172,819	168,869
2040	**153,307**	**153,307**	174,979	170,980



Traffic Demand

In order to calculate new growth and development's fair share of the cost of road improvements, it is necessary to establish how much of the future traffic on Sandy Springs's roads will be generated by new growth, over and above the traffic generated by the city's residents and businesses today. This Section describes the process through which this determination is made.

Summary

A Level of Service must be established for road improvements in order to assure that, ultimately, existing development and new growth are served equally. This Section also presents the process through which new growth and development's 'fair share' of road improvement costs is calculated, and tables summarizing the technical portions of this methodology are included.

Level of Service

The City has set its Level of Service for road improvements at LOS 'D', a level to which it will strive ultimately. However, interim road improvement projects that do not result in a LOS of 'D' will still provide traffic congestion relief to current and future traffic alike, and are thus eligible for impact fee funding.

All road improvement projects benefit existing and future traffic proportionally to the extent that relief from over-capacity conditions eases traffic problems for everyone. For example, since new growth by 2040 will represent a certain portion of all 2040 traffic, new growth would be responsible for that portions cost of the road improvements.

It is noted that the cost-impact of non-Sandy Springs generated traffic on the roads traversing the city (cross commutes) is off-set by state and federal assistance. The net cost of the road projects that accrues to Sandy Springs reasonably represents (i.e., is 'roughly proportional' to) the impact on the roads by Sandy Springs residents and businesses.

The basis for the road impact fee would therefore be Sandy Springs' cost for the improvements divided by all traffic in 2040 (existing today plus new growth)—i.e., the cost per trip—times the traffic generated by new growth alone. For an individual land use, when a building permit is issued, this cost per trip would be applied to the number of trips that will be generated by the new development, assuring that new growth would only pay its 'fair share' of the City's net costs of the road improvements that serve it.

Approach

The methodology proceeds along the following lines:

- Total traffic currently generated by Sandy Springs residents and businesses on the road system within the city is calculated from trip generation and commuting data for 2010, and extended to 2016.
- Future Sandy Springs-generated traffic from new growth in the city is calculated from housing unit and employment forecasts to 2040. The portion of total 2040 traffic that is generated by new housing units and employment in the city is calculated.
- Lastly, 'primary' trip ends are calculated using percentages of total traffic from ITE's *Trip Generation* manual. Primary trip ends are the appropriate connection to actual impact on the city's road network by its existing and future land uses. The overall percentage of new

primary trips establishes the percentage of Sandy Springs' cost of the future road improvements that can be included in an impact fee.

Summary Tables

The first table below shows how the portion of total 2040 traffic generated by new growth (i.e., Total Trip Ends) is calculated. By 2040, 28.1% of all trips generated by Sandy Springs residents and businesses will come from new growth and development in the city.

Table 15: Average Daily Trip Ends Generated by New Growth

	2016	2040	Increase	Percent New Growth Trip Ends
Residential (For-Sale Housing)	238,704	340,806	102,102	
Residential (For-Rent Housing)	207,161	295,765	88,604	
Commercial	210,679	272,745	62,066	
Office	541,588	721,198	179,610	
Hotels	15,937	51,354	35,417	
Less: Internal Commutes*	(205,401)	(279,490)	(74,089)	
Net Daily Trip Ends	1,008,668	1,402,378	393,710	28.1%

* Residents who work in Sandy Springs. These trips to and from work are included in the residential trips, above.

From the total trip generation figures above, Table 16 calculates the Primary Trip Ends generated by existing and future traffic by deleting pass-by and diverted trips, as discussed below.

Table 16: Primary Daily Trip Ends Generated by New Growth

	Percent Primary Trip Ends*	Primary Trip Ends			Percent New Growth Primary Trip Ends
		2016	2040	Increase	
Residential (For-Sale Housing)	79%	188,556	269,208	80,652	
Residential (For-Rent Housing)	92%	189,898	271,118	81,220	
Commercial	49%	103,233	133,645	30,412	
Office	92%	498,261	663,502	165,241	
Hotels	100%	15,937	51,354	35,417	
Less: Internal Commutes	100%	(205,401)	(279,490)	(74,089)	
Net Primary Trip Ends		790,483	1,109,337	318,854	28.7%

* Derived from'Trip Generation Handbook' chapter, *Trip Generation* , 9th Edition, Institute of Transportation Engineers.

Excluding pass-by and diverted trips, new growth and development in the city will generate 28.7% of all primary trip traffic generated by Sandy Springs residents and businesses. Thus, new growth's 'fair share' of the cost to the City to provide road improvements to the existing road network cannot exceed 28.7%.

Pass-by and Diverted Trips

The impact of new growth and development on Sandy Springs' road network is the increased number of vehicles added to the system, expressed by transportation engineers as 'trips'. Every 'trip' has two ends—a beginning at its origin and an end at its destination (known as 'trip ends'). There are three types of trips, defined as:

> A Primary Trip (and its trip ends)—a vehicle travelling from its original beginning to its intended final destination without an intermediate stop. Driving from ones home directly to ones place of work is an example of a primary trip.
>
> A Pass-by Trip—a vehicle travelling along its usual route from its origin to its final destination that stops off at an intermediate location for any reason. A trip from home to work that stops along the way for gas, dropping off a child at daycare, picking up coffee or dinner, or for any other reason, represents a 'pass-by' trip at the intermediate location.
>
> A Diverted Trip (previously called a 'diverted link' trip)—a vehicle that diverts from its normal primary trip route between its origin to its final destination, and takes a different route to stop off at an intermediate location for any reason. While a pass-by trip remains on its normal route, a diverted trip changes its route to other streets to arrive at the intermediate stop.

New primary trips add vehicles to the road network. Pass-by and diverted trips involve the same vehicles stopping off between their original beginnings and their final destinations, and therefore do not add new vehicles to the road network—the vehicles were already there on their way to their destinations.

These different types of trips result in different types of 'trip ends'. On a home-to-daycare-to-work trip, for instance, there are two primary trip ends (home and work) and two pass-by or diverted trip ends: arriving at the daycare center and leaving from there to drive to work. The net impact on the road network, however, is created by the one vehicle and its two primary trip ends.

Impact fee calculations take note of these pass-by and diverted trip ends as not adding to the overall traffic on the road network, and deletes them from the total trip ends reported in ITE's *Trip Generation* manual. While Table 16, above, uses overall average percentages of primary trip ends derived from ITE for broad land use categories, the actual percentage for each land use listed on the impact fee schedule for roads is applied to the total trip ends to determine the primary trip ends attributed to that particular land use.

Although both summary tables above reflect about the same percentage of 2040 traffic that will be generated by new growth, the increase in primary trip ends from the second table will play an important role in calculating the per-trip road impact fee.

■ Residential Trip Generation

Average trip generation rates published by the Institute of Transportation Engineers (ITE) differentiate between 'single-family detached housing' and 'apartments'. The closest correlations with the US Census definitions are 'single-family units' and 'multi-family units', and the closest approxima-

tion with the housing categories in the previously cited Market Report[7] are 'for-sale housing' and 'for-rent housing', which are shown on the following table.

Table 17: Residential Units by Type: 2016 and 2040

	2016	Percent*	2040	Increase 2016-2040
For-Sale Housing Units	25,074	44.59%	35,799	10,725
For-Rent Housing Units	31,152	55.41%	44,476	13,324
Total Housing Units	56,226	100.00%	80,275	24,049

* Percentage derived from split by unit type in the RCLCO Market Report.

The total 2016 number of housing units on the table to the left is taken from the projections of housing units described in a previous Section of this Appendix. The breakdown by housing type is calculated using the percentages of housing units by type established in the Market Report. It is assumed in the Market Report and this methodology that these percentages will persist into the future, producing a breakdown of the projected 24,049 new housing units forecast for the 2016-2040 period.

The next table, below, calculates the amount of traffic that is generated by the city's housing stock today, and the amount that will be generated in 2040.

Table 18: Residential Trip Generation: 2016-2040 New Growth Increase

	ADT* Trip Ends	2016 Units	2016 ADT Trip Ends	2040 Units	2040 ADT Trip Ends	Increase 2016-2040	Percent New Growth Trip Ends
For-Sale Housing Units	9.52	25,074	238,704	35,799	340,806	102,102	⇩
For-Rent Housing Units	6.65	31,152	207,161	44,476	295,765	88,604	
Total Housing Units		56,226	445,865	80,275	636,571	190,706	29.96%

*Average Daily Traffic (trip ends) on a weekday; Institute of Transportation Engineers *Trip Generation* , 9th Edition. Rate for single-family assumed for sales housing, and multi-family rate for rental housing. Totals include trips to/from work.

The calculations are made on the basis of 'average daily traffic' on a normal weekday, using average trip generation rates derived through multiple traffic studies (350 for single-family and 86 for apartments) and published by ITE. The rates are expressed for 'trip ends'—that is, traffic both leaving and coming to a housing unit.

Comparing traffic in 2016 to 2040, the future increase in trip ends can be calculated, which will represent 29.96% of all residential trip ends generated by housing units located in the city.

It should be noted that the traffic generated includes trips to and from work and, more particularly, residents who work at a business within the city.

[7] *Sandy Springs Comprehensive Plan: RCLCO Market Report*, Robert Charles Lesser & Company, October 29, 2015.

Nonresidential Trip Generation

Calculating traffic generated by businesses located in Sandy Springs is more problematical than residential trips because there is no breakdown of types of businesses in the city that is adequately detailed and readily available. In addition, while employment forecasts have been made in terms of broad land use categories, there is no data available for jobs or floor areas by detailed type of use.

The alternate is to view nonresidential traffic generation on a broad 'average' basis. For this, there is data available from ITE for a number of individual uses relating to the total number of trips generated per employee. These trips, of course, include not only trips taken by the employee (to/from work, lunch, etc.) but also customers and others that are attracted to the use or serve it in some way.

The following table shows the 'trips per employee' for those uses for which impact fees are commonly collected and for which the data is available.

Table 19: Average Daily Trips-per-Employee Data

	ITE Code	Land Use	Trip Ends per Employee	Average by Category
Office and Medical	610	Hospital	4.50	4.54
	620	Nursing Home	3.26	
	630	Clinic	8.01	
	710	General Office Building	3.32	
	714	Corporate Headquarters Building	2.33	
	715	Single-Tenant Office Building	3.70	
	720	Medical-Dental Office Building	8.91	
	760	Research and Development Center	2.77	
	770	Business Park	4.04	
Lodging	310	Hotel or Conference Motel	14.34	13.58
	320	Motel	12.81	
Retail Commercial	812	Building Materials and Lumber Store	32.12	33.00
	814	Variety Store	66.70	
	815	Free-Standing Discount Store	28.84	
	816	Hardware/Paint Store	53.21	
	817	Nursery (Garden Center)	21.83	
	818	Nursery (Wholesale)	23.40	
	826	Specialty Retail Center	22.36	
	841	Automobile Sales	21.14	
	850	Supermarket	87.82	
	854	Discount Supermarket	40.36	
	860	Wholesale Market	8.21	
	861	Discount Club	32.21	
	875	Department Store	11.56	
	890	Furniture Store	12.19	

Source: *Trip Generation* , 9th Edition, Institute of Transportation Engineers, where survey results given for key land uses.

The Market Report addresses nonresidential uses in three broad categories: commercial, office and hotels. The individual land uses and their employee trip end rates are grouped in Table 19 by these three categories. Since the rates vary from one use within a category to another, all of the rates within a category are averaged together to produce an average rate to use for each category. For instance, the average trip generation rate of all retail commercial uses listed in Table 19 is 33.00 trip ends per employee.

We know from the 2010 Census how many people worked in Sandy Springs based on commuting patterns that year—how many employees commuted into the city, how many residents commuted to work outside the city, and how many both lived and worked in Sandy Springs.

Table 20: Commuting Patterns - 2010

Sandy Springs	Employed Persons	Percent
Total Employment	80,864	
Residents working in City	13,566	16.8%
Workers commuting in	67,298	83.2%
Employed Residents	50,737	
Residents working in City	13,566	26.7%
Workers commuting out	37,171	73.3%

Source: US Bureau of the Census, 2010 Decenneial Census.

The number of city residents that work in Sandy Springs is an important factor in assigning vehicle trip generation rates to existing and future residents because 'internal' commuting trips are counted twice. Average primary trips from and to a residence (going to work) are also counted as primary trips to and from the workplace itself. This is, essentially, counting one car on the road twice a day going to work from a residence, and the same car on the road twice a day arriving at work and leaving. While not a problem when a resident works outside the city or a commuter arrives from outside the city, a double count results when the resident and the worker are the same person (driving the same car). These internal commutes are addressed in the next table.

Table 21 provides a breakdown between commercial, office and hotel employment in the city and calculates trip ends generated by each using the average rates calculated in Table 19. The table calculates the total number of trip ends that will be generated by new nonresidential growth within the city in terms of future traffic on Sandy Springs' roads.

Table 21: Nonresidential Trip Generation: 2016-2040 New Growth Increase

	ADT per Employee	2016 Employees	2016 Trip Ends	2040 Employees	2040 Trip Ends	2016-2040 Increase	Percent New Growth Trip Ends
Commercial	33.00	6,385	210,679	8,266	272,745	62,066	
Office	4.54	119,351	541,588	158,932	721,198	179,610	
Hotels	13.58	1,174	15,937	3,783	51,354	35,417	
Total		126,910	768,204	170,980	1,045,297	277,093	
Less: Internal Commutes at		26.74%	(205,401)		(279,490)	(74,089)	
Net Nonresidential Trip Ends			562,803		765,807	203,004	26.5%

The number of trip ends currently generated by Sandy Springs businesses based on 2016 employment is shown on Table 21. The 2016 number of employees is distributed among the three categories using the same percentages derived from the Market Report for 2015. When multiplied by the average daily traffic rates from Table 19, total trip ends for each category are determined.

The same calculations are made for the year 2040 based on projected employment in the city (using the 2035 percentage distribution from the Market Report), and the differences between 2016 and 2040 represent trip ends generated in each land use category by future growth and development.

Lastly, the number of trips to/from work generated by city residents is deducted from the total of all nonresidential trips, since these 'internal' commuting trips have already been calculated as part of the residential trip generation rates. The net result is that new growth and development will generate 26.5% of all nonresidential trip ends produced by residents and businesses in the city in 2040.

The results of the residential and nonresidential trip generation analyses are combined on the Summary Table 15 at the beginning of this Section for an overall calculation of new growth's share of future traffic generated by Sandy Springs residents and businesses. From these figures, pass-by and diverted trip ends are deleted to determine primary trip ends, shown on Summary Table 16, which more closely relates to vehicles on the road and thus contribute directly to traffic congestion.

Terminology

This Traffic Demand Section uses the term 'average daily traffic' (ADT) for a weekday, which is defined by ITE as the 'average weekday vehicle trip ends', which are "the average 24-hour total of all vehicle trips counted from a study site from Monday through Friday."

Additionally, ITE defines a 'trip or trip end' as "a single or one-direction vehicle movement with either the origin or the destination (exiting or entering) inside a study site. For trip generation purposes, the total trip ends for a land use over a given period of time are the total of all trips entering plus all trips exiting a site during a designated time period".

Lastly, ITE defines 'average trip rate' as "the weighted average of the number of vehicle trips or trip ends per unit of independent variable (for example, trip ends per occupied dwelling unit or employee) using a site's driveway(s). The weighted average rate is calculated by dividing the sum of all independent variable units where paired data is available. The weighted average rate is used rather than the average of the individual rates because of the variance within each data set or generating unit. Data sets with a large variance will over-influence the average rate if they are not weighted".